

# THE IRON AGE

THURSDAY, FEBRUARY 14, 1889.

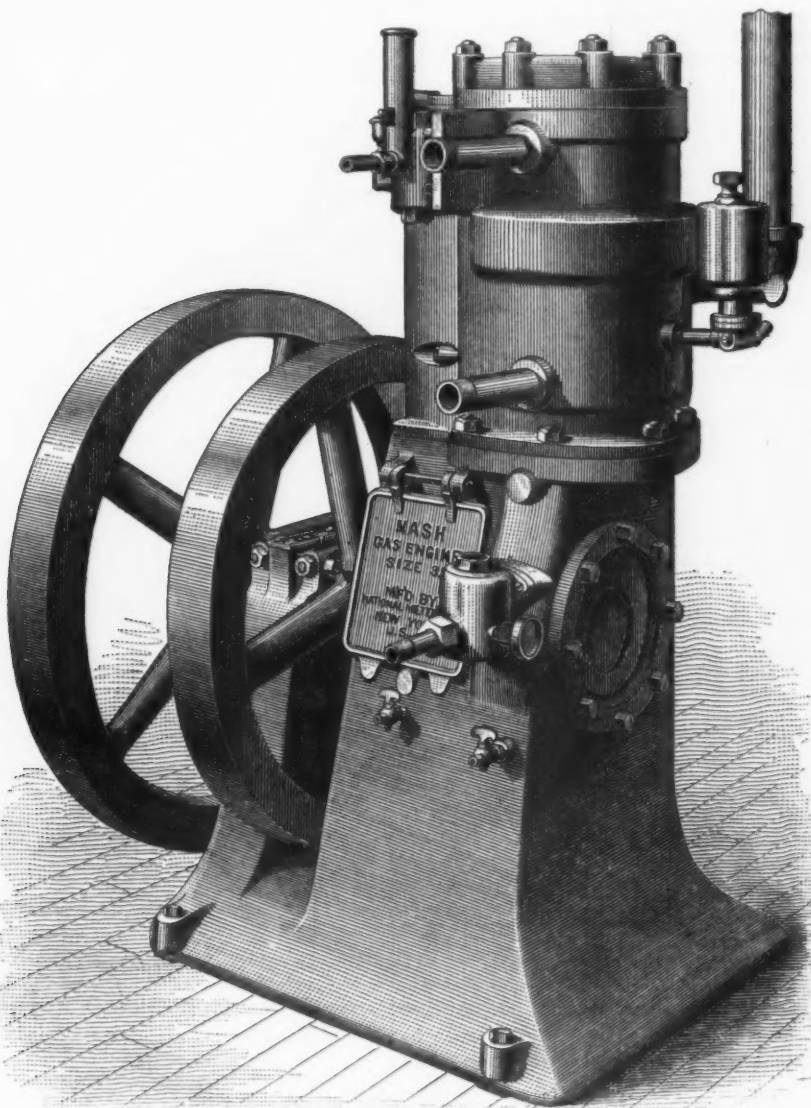
## The Nash Gas Engine.

Several important considerations governed the designing of the engine of which we present a perspective and sectional drawings. It was aimed to operate the engine with a combustible mixture always of uniform proportions; to provide for governing; to supply the mixture as fast as used; to prevent the premature ignition of the charge; to prevent the flame in the

through the mixing valve shown in Fig. 3, which is placed externally as represented in Fig. 2. This valve automatically regulates the relative proportional supply of gas and air to the cylinder, so that the charge is of uniform quality and density. Air enters through the opening at the bottom, while the flow of gas is regulated by the valve *f*. In the interior are two valve ports of unequal area, with which a double-seated valve, *i*, operates by its weight verti-

trolled by the valve *k* operated by the governor *n*.

The ignitor *b*, Fig. 1, and shown enlarged in Fig. 4, is based upon a new principle. The igniting jet of combustible mixture is caused to rotate in the circular chamber *r*, into which it enters through a passage tangentially placed. This forms a vortex of plane which is positive in its action and simple. The valve itself, *B*, is made of steel, and is



THE NASH GAS ENGINE, BUILT BY THE NATIONAL METER COMPANY OF NEW YORK.

power cylinder from being communicated back to the supply reservoir; to prevent the leakage of the supply valve from fouling the supply for the engine; and to provide for the admission of the charge, its ignition, prevent the fouling of the supply, and prevent the back passage of the flame by a poppet valve.

The combustion or power chamber is formed partly in a separate hood and communicates at one side of the latter with the supply valve port. The forward end of the power cylinder opens into a casing of the base, which forms a compression supply chamber of which the piston is the compressor. In this chamber work the connecting rod and crank, and into it the combustible mixture of gas and air is drawn during the upward stroke of the piston

cally to control the flow of gas through the smaller valve and the flow of air through the other. It is evident that the relative quantities of air and gas drawn in by the suction created by the upward movement of the piston will be in accordance with the size of the air and gas openings. The valve is made of sufficient weight to greatly overcome the gas pressure, so that any slight variations in the latter will not materially affect the proportions of the parts of the mixture.

From the supply reservoir the mixture passes upward through a passage clearly shown in Fig. 1. Its admission to the combustion chamber above the piston is controlled by a valve of the poppet type, having an ample bearing seat. The quantity of gas admitted at each stroke is con-

hardened and ground to size. It moves in a reamed hole in the case, being so loosely fitted as to drop of its own weight, and yet making a gas-tight joint. Since the valve is perfectly balanced as to gas pressure, it moves without friction, and therefore requires a very small quantity of oil—just sufficient to prevent it becoming dry. The valve is made long, and the lower part has a bearing in that part of the case kept cool by a water jacket. As oil is only applied to the lower end, very little can work up to the hot end where the ignitor is heated; hence the formation of gummy oil is prevented and the valve seldom needs cleaning. In actual use it has been found that the case and upper end of the valve never come into metallic contact, as, on account of the looseness of fit

at that point, a scale of hard carbon is formed over the surface of each, which protects them from abrasion. The valve is positively operated by an eccentric on the shaft. The piston connection, shown clearly in Fig. 2, is unique in design, as it is not "pin connected," and as it operates without friction. Held rigidly to the piston is a hardened and ground steel block, against which the end of the connecting-rod, which is also hardened, rests. The rod has no sliding movement; it simply rocks on the bearing pin. It is held in place by a yoke, and as the pressure on the piston is always downward the yoke is not subjected to strain.

The engine ignites its charge at each revolution, and the amount of the charge is controlled at each stroke by a governor, as before mentioned, so that the regulation is as close as for a steam engine. An examination of a card taken from this engine shows a remarkable resemblance to

plosive mixture. The fly-wheel is stationed between two bearings formed in the single base casting, and hence the alignment of the shaft is always true. The working parts are inclosed and protected from

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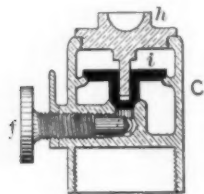


Fig. 3.—Mixing Valve.

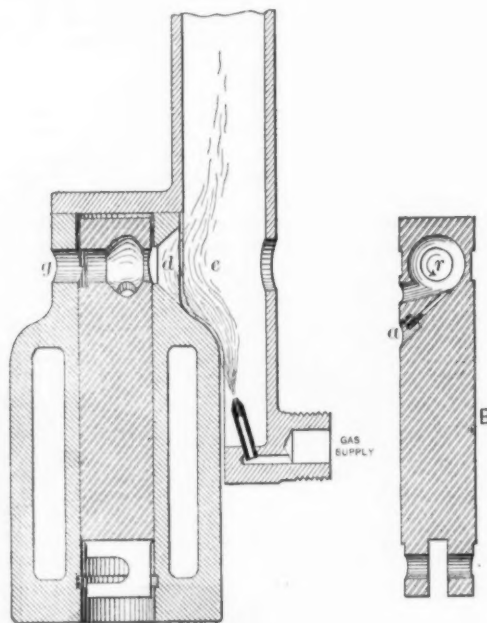


Fig. 4.—Ignition Valve.

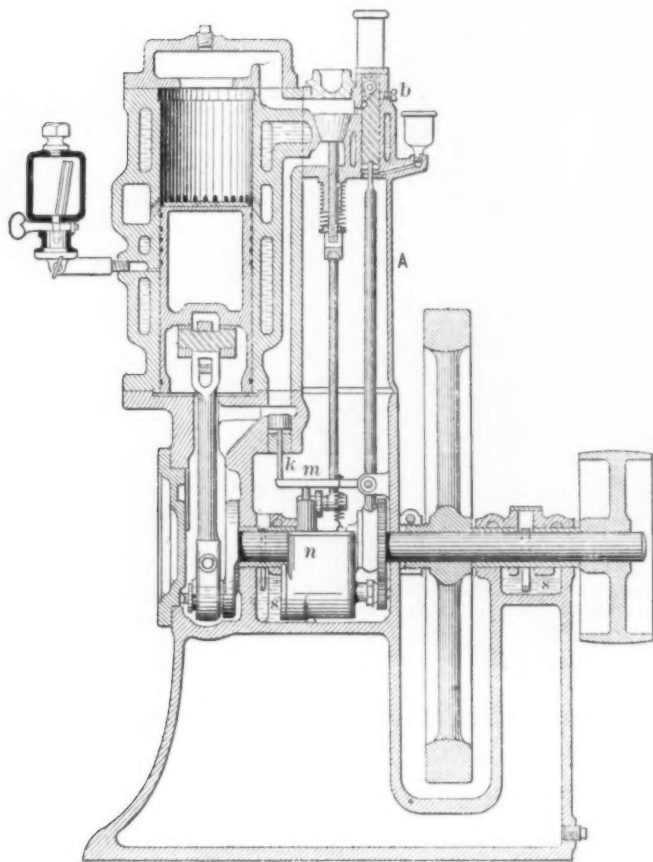


Fig. 1.—Side Sectional Elevation.

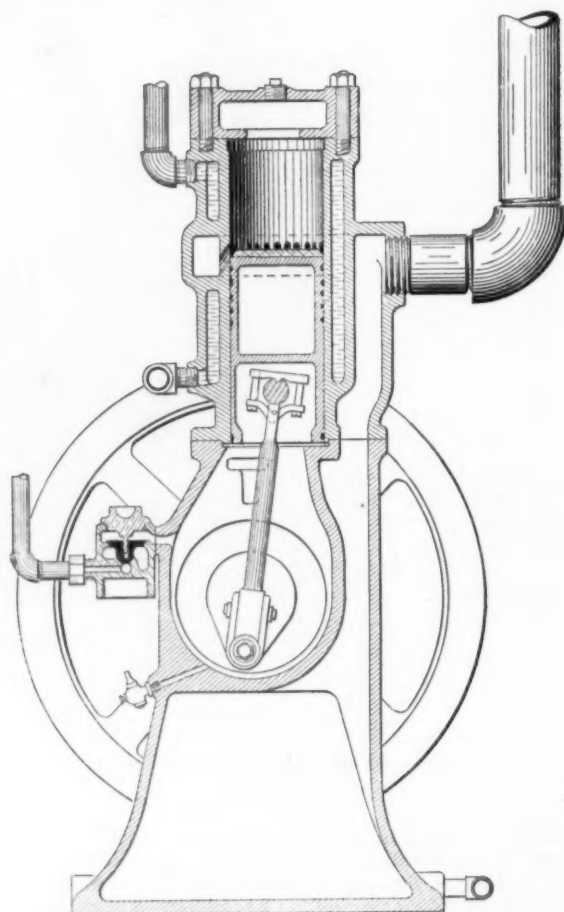


Fig. 2.—End Sectional Elevation.

#### DETAILS OF NASH GAS ENGINE, BUILT BY THE NATIONAL METER COMPANY OF NEW YORK.

the card of a steam engine. The pressure at the beginning of the stroke is moderate and the line of the expansion is well sustained throughout the entire stroke. There is no sudden shock, and the pressure on the working parts is as easy as if steam were the motive fluid instead of an ex-

dust, and at the same time they are readily accessible by swinging covers. Owing to the high speed attained by the engine, and also to the fact that the piston receives a positive impulse at every stroke, it is especially adapted for work requiring uniform speed, such as electric lighting.

National Meter Company, of 252 Broadway, New York.

It is reported that the Chapin Mine, on the Menominee range, has been leased for 30 years for a cash consideration, and subject to a royalty of 40 cents a ton.

### Pipe and Nipple Machine.

The accompanying engravings represent a combined pipe and nipple machine built by the Bignall & Keeler Mfg. Company, of St. Louis. It is adapted to mill use and common job shop work; it cuts and threads both pipe and nipples from  $\frac{1}{4}$  to 2

inches inclusive; no change, except of the grippers, is required for either service. The machine need not be stopped to change the pipe, as a simple lever movement opens or closes the chuck at will. Fig. 2 is a longitudinal sectional elevation, broken away, when used as a pipe gripper; Fig. 3 is a front view of the same. The jaws or grippers *a* are fitted radially to the pipe *b*, at right angles to each other, within the carriers or holders *c*, which are arranged in front of the head *d* of the chuck, and are formed in one piece (re-

spectively) with the front end of the levers *e*, which are pivoted in the head *d*, and carried by the chuck. The rear ends of the levers are coupled together by springs, not shown, and are provided with rollers, *f*, for riding over the cone *g*, which surrounds the spindle *h*, and is moved to and fro along the latter for operating the

is prevented by pins bearing against the shoulders *m* of the screws, so that when the latter are turned the jaws will be moved to or from the pipe as required. The outer end of the shank *k* is flush with the outer end of the carrier, and is formed with a key, by which the screw may be turned. When the cone *g* is moved along the spindle by its clutch in the usual manner for diverging the rear arms of the levers, the jaws of the grippers are brought toward the pipe and the rear portions of the gripping edges of the jaws are caused to bite into and grip the pipe somewhat in advance of, and therefore to a greater extent than, the front portion of the edges, and the pipe is more firmly held than when the grippers close upon the pipe at right angles. To increase the gripping force the inclination of the cone at its highest pass is lessened so as to gain more power on the levers at that point. By turning the screws the jaws can be speedily adjusted to different sized pipes. By the use of four jaws in lieu of two, as usual, the pipe is set truer as the grippers close upon it. The slides used for holding the pipe steady while cutting off are operated by a crank and right and left screw on the work side of the machine.

When the machine is used as a nipple chuck, nipple grippers are inserted in place of the pipe grippers, the rest of the chuck being as described. By using four nipple grippers, or quarter sections, the nipple is readily released by operating the chuck with the lever movement and allowing the nipple to drop.

So great is the demand upon the resources of the various shipbuilding yards in the Delaware River and at Wilmington that contracts for early delivery cannot be made. It is stated that the United States and Brazil Mail Steamship Company are

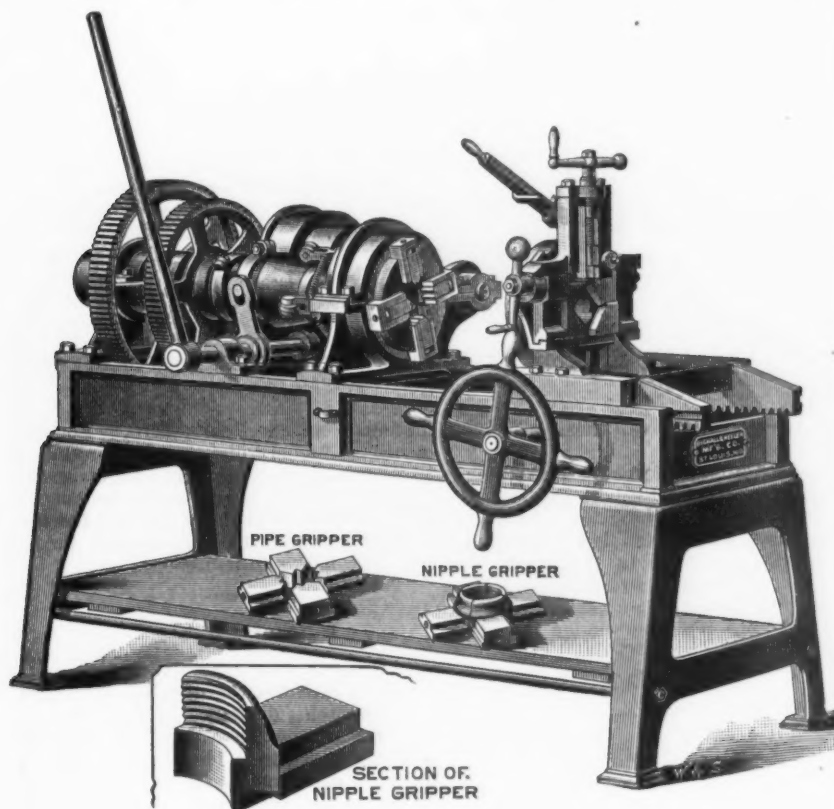


Fig. 1.—Perspective View.

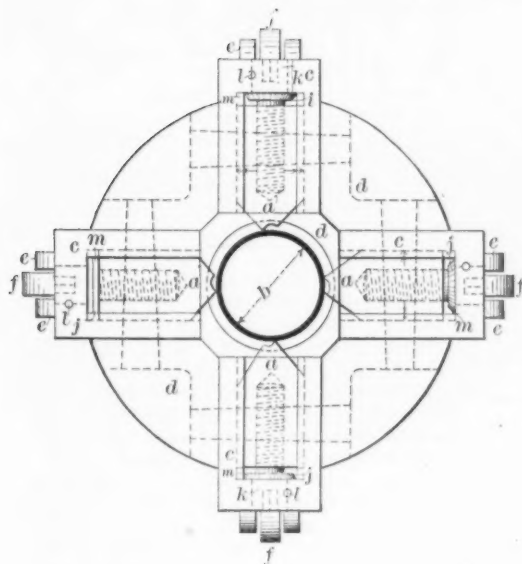


Fig. 3.—Front View of Fig. 2.

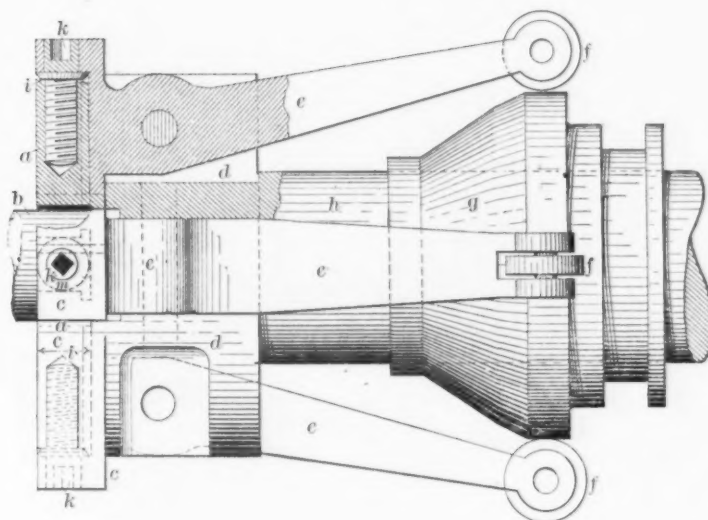


Fig. 2.—Longitudinal Sectional Elevation of Chuck.

PIPE AND NIPPLE MACHINE, BUILT BY THE BIGNALL & KEELER MFG. COMPANY OF ST. LOUIS MO.

levers in the usual manner. The rear edges of the jaws are formed with lateral ribs, and are fitted within grooved recesses, *i*, formed longitudinally in the faces of the carriers *c*, these recesses corresponding in shape to the jaws. The jaws, thus constructed, can be adjusted longitudinally in the recesses by means of adjusting screws, which engage internal threads in the outer ends of the jaws, the shanks *k* of the screws passing through circular openings in the outer ends of the carriers *c*. Longitudinal movement of the screws

unable to procure bids upon two steamers which they want unless willing to wait two years for them to be finished. The ships recently negotiated for include one for the Mallory Steamship Company and two for the New York and Cuba Mail Steamship Company, which will be built at Roach's yard, one for the Morgan Line, and two for the Red D Line, contracted for a William Cramp & Sons, and a steel steamer of 5000 tons displacement, which a Scotch firm is building for the Pacific Mail Steamship Company.



### Tire-Heating Furnace.

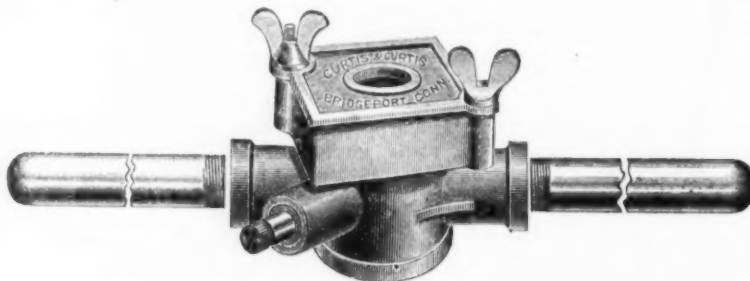
In this furnace the tires rest upon two parallel grooved shafts placed over each side of the fire. The upper parts of the tires are held separated by a wire frame, as shown in the cut. The outer end of each shaft is provided with a sprocket wheel, over which passes a chain leading from a suitable driving shaft. By this means the tires are kept revolving slowly, and each is brought constantly in contact with the fire. The oven itself is heated sufficiently to keep them all at a proper temperature. As fast as one is removed another is put in its place, the heating going on faster than the tires can be put on the wheels, and without the least danger of burning. The fire-box is adapted to burn either coal or wood. This furnace, known as the Duffey, is made by Bradley & Co., of Syracuse, N. Y.

### The Blast Furnaces in Allegheny County.

In the future, in our monthly report of the condition of the blast furnaces of the country, we shall reduce the number of coke stacks credited to Allegheny County from 20 to 18. This has been made necessary by the fact that two of the three stacks operated by Laughlins & Co., at Pittsburgh, have been dismantled. These two stacks were blown out some weeks since for the purpose of being relined, and work had already been commenced when one of the stacks fell in, and it was

of about 500 tons per day. This entire amount, or nearly all of it, will be consumed by the firm named above, who are interested in the furnaces. The two stacks which have been dismantled were erected in 1861, and have been in continuous operation since 1882 on one lining, which is certainly a remarkable record. In that time it is estimated that the two

their history. The two stacks of Shoenberger, Speer & Co., are turning out nearly 5000 tons per month. One of them will be blown out in the near future for relining and will also be fitted up with new stoves of the Massicks & Crooke's design. The new Soho Furnace, of the Moorhead-McCleane Company, was put in blast on November 15 last, and thus far



RATCHET DIE STOCK, MADE BY CURTIS & CURTIS, BRIDGEPORT, CONN.

stacks have produced very nearly 500,000 tons of pig iron.

Clinton Furnace, formerly owned and operated by Graff, Bennett & Co., but later operated by a syndicate of creditors of that firm, was banked last month, and will probably not go in blast again for some time, if it ever resumes again. It is a very old furnace and cannot produce over 325 tons per week under the most favorable conditions. Carrie Furnace, of

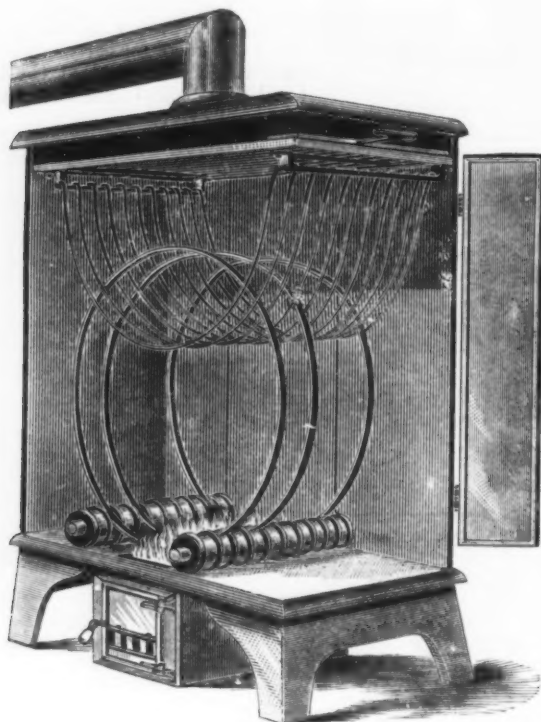
has made an excellent record. For the month of January just closed it produced 5676 gross tons of pig iron. Unless something unforeseen should occur the output of pig iron in Allegheny County for the present year will be considerably larger than ever before in its history.

### Ratchet Die Stock.

The illustration presented herewith shows a ratchet die stock which has just been brought out by Curtis & Curtis, of Bridgeport, Conn. The hub, which is threaded at diametrically opposite points to receive the handles, is free to revolve upon the central stock. In the hub is a pawl, pressed inward by a spring, to engage its inner end with suitably formed teeth upon the stock. The pawl may be turned a half revolution, so that the hub and stock may be held to revolve in either direction desirable. During the reverse movement of the handles the hub, of course, turns independently of the center. The ratchet allows the tool to be worked without changing hands, and thus avoids all loss of power and dead centers.

The scheme for the training of mechanics approved by the Master Builders' Exchange, of Philadelphia, provides for the education of boys in a mechanical trade school until they have obtained a certificate of proficiency and a service for a term of practice with an employer, this term to be at least one year less than the usual term of apprenticeship by virtue of the holding of a certificate of proficiency granted by a mechanical trade school. The completion of the education of the mechanic is to be acknowledged on the part of the employer by the granting of a certificate from the association of builders, setting forth that the holder has passed through the prescribed course at the trade school and the term of practice with an employer, and is entitled to be received by all builders as a journeyman. With similar schools established in New York, Philadelphia and Boston, this system will, it is believed, in time afford a substitute in part for the old form of apprenticeship, and be of advantage to both the young men and their employers.

It is reported from Duluth that large works for the production of aluminium are to be erected in that city, but such stories are to be received with reservation, at least until it is positively known that the metal can be manufactured profitably.



DUFFEY TIRE-HEATING FURNACE, BUILT BY BRADLEY & COMPANY, SYRACUSE, N. Y.

then decided by the firm to dismantle both of them, the work having been almost completed already. The new stack completed by this firm in the early part of last year is in operation, and is producing about 250 tons per day, which is all consumed by the American Iron and Steel Works of Jones & Laughlins, Limited. Work on the new stack is progressing rapidly, and it will probably be ready for blast by the middle of March. It will also have a capacity of about 250 tons per day, giving the firm a total production

the Carrie Furnace Company, continues in blast and is making a good record. This firm are also building an additional stack, which will probably be ready for blast not later than April next. It will have a capacity of about 200 tons per day. The nine stacks controlled by Carnegie Bros. & Co., Limited, and Carnegie, Phipps & Co., Limited, are all in blast and producing nearly 60,000 tons of pig iron per month. The two stacks of the Isabella Furnace Company are in blast and producing more pig iron than ever before in



## The Bugaboo of Trusts.\*

BY ANDREW CARNEGIE.

We must all have our toys; the child his rattle, the adult his hobby, the man of pleasure the fashion, the man of art his master; and mankind in its various divisions requires a change of toys at short intervals. The same rule holds good in the business world. We have had our age of "consolidations" and "watered stocks." Not long ago everything was a "syndicate;" the word is already becoming obsolete, and the fashion is for "trusts," which will in turn no doubt give place to some new panacea, that is in turn to be displaced by another, and so on without end. The great laws of the economic world, like all laws affecting society, being the genuine outgrowth of human nature, alone remain unchanged through all these changes. Whenever consolidations, or watered stocks, or syndicates, or trusts endeavor to circumvent these, it always has been found that the result is after the collision there is nothing left of the panaceas, while the great laws continue to grind out their irresistible consequences as before.

It is worth while to inquire into the appearance and growth of trusts and learn what environs produce them. Their genesis is as follows: A demand exists for a certain article beyond the capacity of existing works to supply it. Prices are high, and profits tempting. Every manufacturer of that article immediately proceeds to enlarge his works and increase their producing power. In addition to this the unusual profits attract the attention of his principal managers or those who are interested to a greater or less degree in the factory. These communicate the knowledge of the prosperity of the works to others. New partnerships are formed, and new works are erected, and before long the demand for the article is fully satisfied, and prices do not advance. In a short time the supply becomes greater than the demand, there are a few tons or yards more in the market for sale than required, and prices begin to fall. They continue falling until the article is sold at cost to the less favorably situated or less ably managed factory; and even until the best managed and best equipped factory is not able to produce the article at the prices at which it can be sold. Political economy says that here the trouble will end. Goods will not be produced at less than cost. This was true when Adam Smith wrote, but it is not quite true to-day. When an article was produced by a small manufacturer, employing, probably at his own home, two or three journeymen and an apprentice or two, it was an easy matter for him to limit or even to stop production. As manufacturing is carried on to-day, in enormous establishments with five or ten millions of dollars of capital invested, and with thousands of workers, it costs the manufacturer much less to run at a loss per ton or per yard than to check his production. Stoppage would be serious indeed. The condition of cheap manufacture is running full. Twenty sources of expense are fixed charges, many of which stoppage would only increase. Therefore the article is produced for months, and in some cases that I have known for years, not only without profit or without interest upon capital, but to the impairment of the capital invested. Manufacturers have balanced their books year after year only to find their capital reduced at each successive balance. While continuing to produce may be costly, the manufacturer knows too well that stoppage would be ruin.

His brother manufacturers are of course in the same situation. They see the savings of many years, as well perhaps as the capital they have succeeded in borrowing, becoming less and less, with no hope of a change in the situation. It is in soil thus prepared that anything promising relief is gladly welcomed. The manufacturers are in the position of patients that have tried in vain every doctor of the regular school for years, and are now liable to become the victims of any quack that appears. Combinations—syndicates—trusts—they are willing to try anything. A meeting is called, and in the presence of immediate danger they decide to take united action and form a trust. Each factory is rated as worth a certain amount. Officers are chosen, and through these the entire product of the article in question is to be distributed to the public at remunerative prices.

Such is the genesis of "trusts" in manufactured articles.

During the recent Presidential campaign it suited the purpose of one of the parties to connect trusts with the doctrine of protection. But trusts are confined to no country and are not in any way dependent upon fiscal regulations. The greatest trust of all just now is the Copper Trust, which is French, and has its headquarters in Paris. The Salt Trust is English, with its headquarters in London. The Wire-rod Trust is German. The only Steel-rail Trust that ever existed was an international one which embraced all the works in Europe. Trusts, either in transportation or manufactures, are the product of human weakness, and this weakness is co-extensive with the race.

There is one huge combination classed with trusts which is so exceptional in its origin and history that it deserves a separate paragraph. I refer to the Standard Oil Company. So favorable an opportunity to control a product perhaps never arose as in the case of petroleum. At an early stage a few of the ablest business men that the world has ever seen realized the importance of the discovery, and invested largely in the purchase of property connected with it. The success of the petroleum business was phenomenal, and so was the success of these people. The profits they made, and, no doubt, as much capital as they could borrow, were fearlessly reinvested, and they soon became the principal owners, and finally, substantially the only owners, of the territory which contained this great source of wealth. The Standard Oil Company would long ago have gone to pieces had it not been managed, upon the whole, in harmony with the laws which control business. It is a hundred to one whether it will survive when the present men at the head retire; or perhaps I should say when the present man retires, for wonderful organizations imply a genius at the head, a commander-in-chief, with exceptionally able corps commanders no doubt, but still a Grant at the head. To those who quote the Standard Oil Company as an evidence that trusts or combinations can be permanently successful, I say wait and see. I have spoken thus freely of that company because I am ignorant of its management, profits and modes of action. I view it from the outside as a student of political economy only, and as such have endeavored to apply to it the principles which I know will have their way no matter how formidable the attempt made to defeat their operation.

We have given the genesis of trusts and combinations in their several forms. The question is, Do they menace the permanent interest of the nation? Are they a source of serious danger? Or are they to prove, as many other similar forms have proved, mere passing phases of unrest and transition? To answer this question let us follow the operation of the manufacturing

trust which we have in imagination created, salt or sugar, nails, beams, or lead or copper; it is all the same. The sugar refiners, let us say, have formed a trust after competing one with another through years of disastrous business, and all the sugar manufactured in the country in existing factories is sold through one channel at advanced prices. Profits begin to grow. Dividends are paid, and those who before saw their property vanishing before their eyes are now made happy. The dividends from that part of a man's capital invested in the sugar business yield him profit far above the capital he has invested in various other affairs. The prices of sugar are such that the capital invested in a new factory would yield enormously. He is perhaps bound not to enlarge his factory or to enter into a new factory, but his relatives and acquaintances soon discover the fresh opportunity for gain. He can advise them to push the completion of a small factory, which, of course, must be taken into the trust. Or, even if he does not give his friends this intimation, capital is always upon the alert, especially when it is bruited about that a trust has been formed, as in the case of sugar, and immediately new sugar manufactories spring up as if by magic. The more successful the trust, the surer these off-shoots are to sprout. Every victory is a defeat. Every factory that the trust buys is the sure creator of another, and so on, *ad infinitum*, until the bubble bursts. The sugar refiners have tried to get more from capital in a special case than capital yields in general. They have endeavored to raise a part of the ocean of capital above the level of the surrounding waters, and over their bulwarks the floods have burst, and capital, like water, has again found its level. It is true that to regain this level a longer or a shorter period may be required, during which the article affected may be sold to the consumer in limited quantities at a higher rate than before existed. But for this the consumer is amply recompensed in the years that follow, during which the struggle between the discordant and competitive factories becomes severer than it ever was before, and lasts till the great law of the survival of the fittest vindicates itself. Those factories and managers that can produce to the best advantage eventually close the less competent. Capital wisely managed yields its legitimate profit. After a time the growth of demand enables capital to receive an unusual profit. This in turn attracts fresh capital to the manufacture, and we have a renewal of the old struggle, the consumer reaping the benefit.

Such is the law, such has been the law, and such promises to be the law for the future; for, so far, no device has yet been devised that has permanently thwarted its operation. Given freedom of competition, and all combinations or trusts that attempt to exact from the consumer more than a legitimate return upon capital and services write the charter of their own defeat. We have many proofs that this great law does not sleep and that it will not be suppressed. Some time ago, as I have stated, the steel rail manufacturers of Europe formed a trust and advanced the price of rails to such an extent that American manufacturers were able for the first and perhaps for the last time to export steel rails to Canada in competition with the European. But the misunderstandings and quarrels, inseparable from these attempted unions of competitors, soon broke the trust. With vindictive feelings, added to what was before business rivalry, the struggle was renewed, and the steel rail industry of Europe has never recovered. It was found that the advance of prices had only galvanized into life concerns which never should have attempted to manufacture rails; and so that trust died a natural death. During the

\* Extracts from a paper printed in the February number of the *North American Review*.

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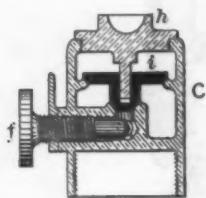


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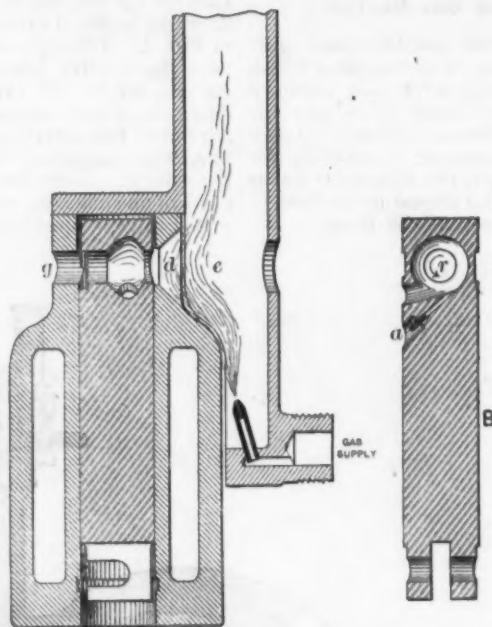


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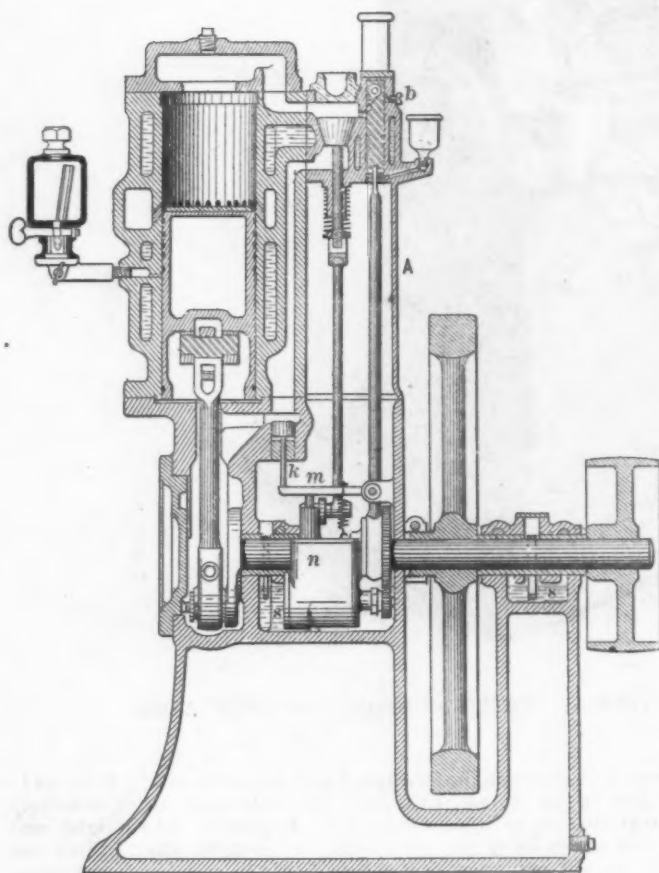


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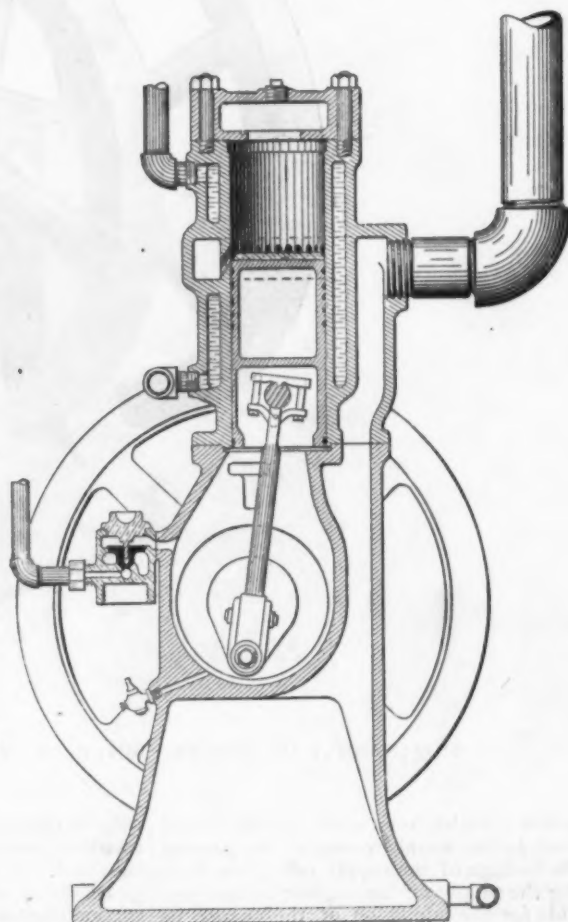


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The accompanying engravings represent a combined pipe and nipple machine built by the Bignall & Keeler Mfg. Company, of St. Louis. It is adapted to mill use and common job shop work; it cuts and threads both pipe and nipples from  $\frac{1}{4}$  to 2

inches inclusive; no change, except of the grippers, is required for either service. The machine need not be stopped to change the pipe, as a simple lever movement opens or closes the chuck at will. Fig. 2 is a longitudinal sectional elevation, broken away, when used as a pipe gripper; Fig. 3 is a front view of the same. The jaws or grippers *a* are fitted radially to the pipe *b*, at right angles to each other, within the carriers or holders *c*, which are arranged in front of the head *d* of the chuck, and are formed in one piece (re-

spectively) with the front end of the levers *e*, which are pivoted in the head *d*, and carried by the chuck. The rear ends of the levers are coupled together by springs, not shown, and are provided with rollers, *f*, for riding over the cone *g*, which surrounds the spindle *h*, and is moved to and fro along the latter for operating the is prevented by pins bearing against the shoulders *m* of the screws, so that when the latter are turned the jaws will be moved to or from the pipe as required. The outer end of the shank *k* is flush with the outer end of the carrier, and is formed with a key, by which the screw may be turned. When the cone *g* is moved along the spindle by its clutch in the usual manner for diverging the rear arms of the levers, the jaws of the grippers are brought toward the pipe and the rear portions of the gripping edges of the jaws are caused to bite into and grip the pipe somewhat in advance of, and therefore to a greater extent than, the front portion of the edges, and the pipe is more firmly held than when the grippers close upon the pipe at right angles. To increase the gripping force the inclination of the cone at its highest pass is lessened so as to gain more power on the levers at that point. By turning the screws the jaws can be speedily adjusted to different sized pipes. By the use of four jaws in lieu of two, as usual, the pipe is set truer as the grippers close upon it. The slides used for holding the pipe steady while cutting off are operated by a crank and right and left screw on the work side of the machine.

When the machine is used as a nipple chuck, nipple grippers are inserted in place of the pipe grippers, the rest of the chuck being as described. By using four nipple grippers, or quarter sections, the nipple is readily released by operating the chuck with the lever movement and allowing the nipple to drop.

So great is the demand upon the resources of the various shipbuilding yards in the Delaware River and at Wilmington that contracts for early delivery cannot be made. It is stated that the United States and Brazil Mail Steamship Company are



Fig. 1.—Perspective View.

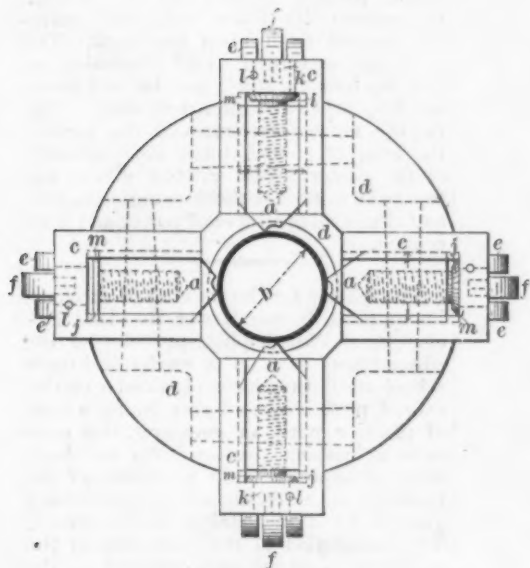


Fig. 3.—Front View of Fig. 2.

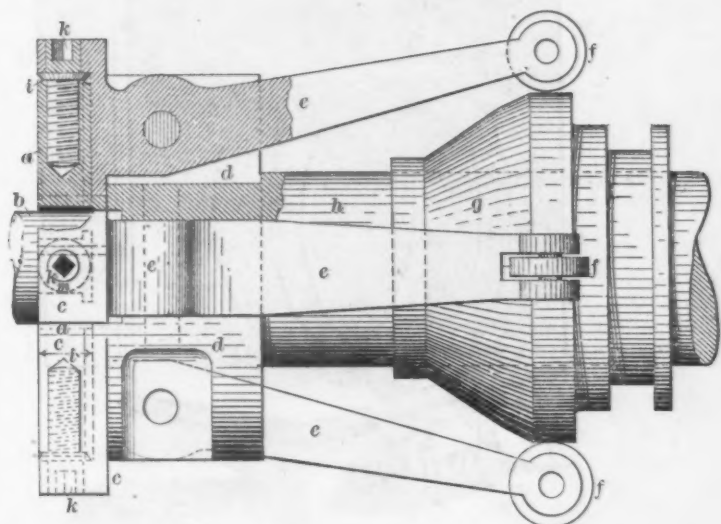


Fig. 2.—Longitudinal Sectional Elevation of Chuck.

PIPE AND NIPPLE MACHINE, BUILT BY THE BIGNALL & KEELER MFG. COMPANY OF ST. LOUIS MO.

inches inclusive; no change, except of the grippers, is required for either service. The machine need not be stopped to change the pipe, as a simple lever movement opens or closes the chuck at will. Fig. 2 is a longitudinal sectional elevation, broken away, when used as a pipe gripper; Fig. 3 is a front view of the same. The jaws or grippers *a* are fitted radially to the pipe *b*, at right angles to each other, within the carriers or holders *c*, which are arranged in front of the head *d* of the chuck, and are formed in one piece (re-

levators in the usual manner. The rear edges of the jaws are formed with lateral ribs, and are fitted within grooved recesses, *i*, formed longitudinally in the faces of the carriers *c*, these recesses corresponding in shape to the jaws. The jaws, thus constructed, can be adjusted longitudinally in the recesses by means of adjusting screws, which engage internal threads in the outer ends of the jaws, the shanks *k* of the screws passing through circular openings in the outer ends of the carriers *c*. Longitudinal movement of the screws

unable to procure bids upon two steamers which they want unless willing to wait two years for them to be finished. The ships recently negotiated for include one for the Mallory Steamship Company and two for the New York and Cuba Mail Steamship Company, which will be built at Roach's yard, one for the Morgan Line, and two for the Red D Line, contracted for a William Cramp & Sons, and a steel steamer of 5000 tons displacement, which a Scotch firm is building for the Pacific Mail Steamship Company.



### Tire-Heating Furnace.

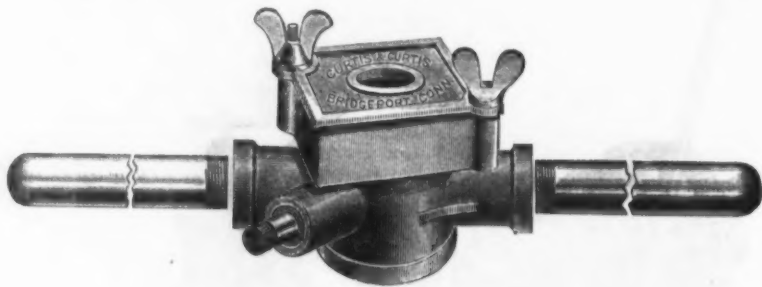
In this furnace the tires rest upon two parallel grooved shafts placed over each side of the fire. The upper parts of the tires are held separated by a wire frame, as shown in the cut. The outer end of each shaft is provided with a sprocket wheel, over which passes a chain leading from a suitable driving shaft. By this means the tires are kept revolving slowly, and each is brought constantly in contact with the fire. The oven itself is heated sufficiently to keep them all at a proper temperature. As fast as one is removed another is put in its place, the heating going on faster than the tires can be put on the wheels, and without the least danger of burning. The fire-box is adapted to burn either coal or wood. This furnace, known as the Duffey, is made by Bradley & Co., of Syracuse, N. Y.

### The Blast Furnaces in Allegheny County.

In the future, in our monthly report of the condition of the blast furnaces of the country, we shall reduce the number of coke stacks credited to Allegheny County from 20 to 18. This has been made necessary by the fact that two of the three stacks operated by Laughlins & Co., at Pittsburgh, have been dismantled. These two stacks were blown out some weeks since for the purpose of being relined, and work had already been commenced when one of the stacks fell in, and it was

of about 500 tons per day. This entire amount, or nearly all of it, will be consumed by the firm named above, who are interested in the furnaces. The two stacks which have been dismantled were erected in 1861, and have been in continuous operation since 1882 on one lining, which is certainly a remarkable record. In that time it is estimated that the two

their history. The two stacks of Shoenberger, Speer & Co., are turning out nearly 5000 tons per month. One of them will be blown out in the near future for relining and will also be fitted up with new stoves of the Massicks & Crooke's design. The new Soho Furnace, of the Moorhead-McCleane Company, was put in blast on November 15 last, and thus far



RATCHET DIE STOCK, MADE BY CURTIS & CURTIS, BRIDGEPORT, CONN.

stacks have produced very nearly 500,000 tons of pig iron.

Clinton Furnace, formerly owned and operated by Graff, Bennett & Co., but later operated by a syndicate of creditors of that firm, was banked last month, and will probably not go in blast again for some time, if it ever resumes again. It is a very old furnace and cannot produce over 325 tons per week under the most favorable conditions. Carrie Furnace, of

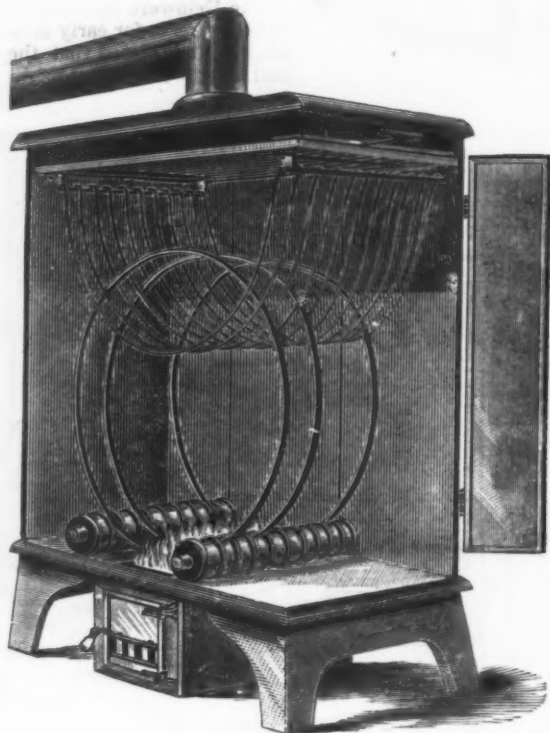
has made an excellent record. For the month of January just closed it produced 5676 gross tons of pig iron. Unless something unforeseen should occur the output of pig iron in Allegheny County for the present year will be considerably larger than ever before in its history.

### Ratchet Die Stock.

The illustration presented herewith shows a ratchet die stock which has just been brought out by Curtis & Curtis, of Bridgeport, Conn. The hub, which is threaded at diametrically opposite points to receive the handles, is free to revolve upon the central stock. In the hub is a pawl, pressed inward by a spring, to engage its inner end with suitably formed teeth upon the stock. The pawl may be turned a half revolution, so that the hub and stock may be held to revolve in either direction desirable. During the reverse movement of the handles the hub, of course, turns independently of the center. The ratchet allows the tool to be worked without changing hands, and thus avoids all loss of power and dead centers.

The scheme for the training of mechanics approved by the Master Builders' Exchange, of Philadelphia, provides for the education of boys in a mechanical trade school until they have obtained a certificate of proficiency and a service for a term of practice with an employer, this term to be at least one year less than the usual term of apprenticeship by virtue of the holding of a certificate of proficiency granted by a mechanical trade school. The completion of the education of the mechanic is to be acknowledged on the part of the employer by the granting of a certificate from the association of builders, setting forth that the holder has passed through the prescribed course at the trade school and the term of practice with an employer, and is entitled to be received by all builders as a journeyman. With similar schools established in New York, Philadelphia and Boston, this system will, it is believed, in time afford a substitute in part for the old form of apprenticeship, and be of advantage to both the young men and their employers.

It is reported from Duluth that large works for the production of aluminium are to be erected in that city, but such stories are to be received with reservation, at least until it is positively known that the metal can be manufactured profitably.



DUFFEY TIRE-HEATING FURNACE, BUILT BY BRADLEY & COMPANY, SYRACUSE, N. Y.

then decided by the firm to dismantle both of them, the work having been almost completed already. The new stack completed by this firm in the early part of last year is in operation, and is producing about 250 tons per day, which is all consumed by the American Iron and Steel Works of Jones & Laughlins, Limited. Work on the new stack is progressing rapidly, and it will probably be ready for blast by the middle of March. It will also have a capacity of about 250 tons per day, giving the firm a total production

the Carrie Furnace Company, continues in blast and is making a good record. This firm are also building an additional stack, which will probably be ready for blast not later than April next. It will have a capacity of about 200 tons per day. The nine stacks controlled by Carnegie Bros. & Co., Limited, and Carnegie, Phipps & Co., Limited, are all in blast and producing nearly 60,000 tons of pig iron per month. The two stacks of the Isabella Furnace Company are in blast and producing more pig iron than ever before in

## The Bugaboo of Trusts.\*

BY ANDREW CARNEGIE.

We must all have our toys; the child his rattle, the adult his hobby, the man of pleasure the fashion, the man of art his master; and mankind in its various divisions requires a change of toys at short intervals. The same rule holds good in the business world. We have had our age of "consolidations" and "watered stocks." Not long ago everything was a "syndicate;" the word is already becoming obsolete, and the fashion is for "trusts," which will in turn no doubt give place to some new panacea, that is in turn to be displaced by another, and so on without end. The great laws of the economic world, like all laws affecting society, being the genuine outgrowth of human nature, alone remain unchanged through all these changes. Whenever consolidations, or watered stocks, or syndicates, or trusts endeavor to circumvent these, it always has been found that the result is after the collision there is nothing left of the panaceas, while the great laws continue to grind out their irresistible consequences as before.

It is worth while to inquire into the appearance and growth of trusts and learn what environs produce them. Their genesis is as follows: A demand exists for a certain article beyond the capacity of existing works to supply it. Prices are high, and profits tempting. Every manufacturer of that article immediately proceeds to enlarge his works and increase their producing power. In addition to this the unusual profits attract the attention of his principal managers or those who are interested to a greater or less degree in the factory. These communicate the knowledge of the prosperity of the works to others. New partnerships are formed, and new works are erected, and before long the demand for the article is fully satisfied, and prices do not advance. In a short time the supply becomes greater than the demand, there are a few tons or yards more in the market for sale than required, and prices begin to fall. They continue falling until the article is sold at cost to the less favorably situated or less ably managed factory; and even until the best managed and best equipped factory is not able to produce the article at the prices at which it can be sold. Political economy says that here the trouble will end. Goods will not be produced at less than cost. This was true when Adam Smith wrote, but it is not quite true to-day. When an article was produced by a small manufacturer, employing, probably at his own home, two or three journeymen and an apprentice or two, it was an easy matter for him to limit or even to stop production. As manufacturing is carried on to-day, in enormous establishments with five or ten millions of dollars of capital invested, and with thousands of workers, it costs the manufacturer much less to run at a loss per ton or per yard than to check his production. Stoppage would be serious indeed. The condition of cheap manufacture is running full. Twenty sources of expense are fixed charges, many of which stoppage would only increase. Therefore the article is produced for months, and in some cases that I have known for years, not only without profit or without interest upon capital, but to the impairment of the capital invested. Manufacturers have balanced their books year after year only to find their capital reduced at each successive balance. While continuing to produce may be costly, the manufacturer knows too well that stoppage would be ruin.

His brother manufacturers are of course in the same situation. They see the savings of many years, as well perhaps as the capital they have succeeded in borrowing, becoming less and less, with no hope of a change in the situation. It is in soil thus prepared that anything promising relief is gladly welcomed. The manufacturers are in the position of patients that have tried in vain every doctor of the regular school for years, and are now liable to become the victims of any quack that appears. Combinations—syndicates—trusts—they are willing to try anything. A meeting is called, and in the presence of immediate danger they decide to take united action and form a trust. Each factory is rated as worth a certain amount. Officers are chosen, and through these the entire product of the article in question is to be distributed to the public at remunerative prices.

Such is the genesis of "trusts" in manufactured articles.

During the recent Presidential campaign it suited the purpose of one of the parties to connect trusts with the doctrine of protection. But trusts are confined to no country and are not in any way dependent upon fiscal regulations. The greatest trust of all just now is the Copper Trust, which is French, and has its headquarters in Paris. The Salt Trust is English, with its headquarters in London. The Wire-rod Trust is German. The only Steel-rail Trust that ever existed was an international one which embraced all the works in Europe. Trusts, either in transportation or manufactures, are the product of human weakness, and this weakness is co-extensive with the race.

There is one huge combination classed with trusts which is so exceptional in its origin and history that it deserves a separate paragraph. I refer to the Standard Oil Company. So favorable an opportunity to control a product perhaps never arose as in the case of petroleum. At an early stage a few of the ablest business men that the world has ever seen realized the importance of the discovery, and invested largely in the purchase of property connected with it. The success of the petroleum business was phenomenal, and so was the success of these people. The profits they made, and, no doubt, as much capital as they could borrow, were fearlessly reinvested, and they soon became the principal owners, and finally, substantially the only owners, of the territory which contained this great source of wealth. The Standard Oil Company would long ago have gone to pieces had it not been managed, upon the whole, in harmony with the laws which control business. It is a hundred to one whether it will survive when the present men at the head retire; or perhaps I should say when the present man retires, for wonderful organizations imply a genius at the head, a commander-in-chief, with exceptionally able corps commanders no doubt, but still a Grant at the head. To those who quote the Standard Oil Company as an evidence that trusts or combinations can be permanently successful, I say wait and see. I have spoken thus freely of that company because I am ignorant of its management, profits and modes of action. I view it from the outside as a student of political economy only, and as such have endeavored to apply to it the principles which I know will have their way no matter how formidable the attempt made to defeat their operation.

We have given the genesis of trusts and combinations in their several forms. The question is, Do they menace the permanent interest of the nation? Are they a source of serious danger? Or are they to prove, as many other similar forms have proved, mere passing phases of unrest and transition? To answer this question let us follow the operation of the manufacturing

trust which we have in imagination created, salt or sugar, nails, beams, or lead or copper; it is all the same. The sugar refiners, let us say, have formed a trust after competing one with another through years of disastrous business, and all the sugar manufactured in the country in existing factories is sold through one channel at advanced prices. Profits begin to grow. Dividends are paid, and those who before saw their property vanishing before their eyes are now made happy. The dividends from that part of a man's capital invested in the sugar business yield him profit far above the capital he has invested in various other affairs. The prices of sugar are such that the capital invested in a new factory would yield enormously. He is perhaps bound not to enlarge his factory or to enter into a new factory, but his relatives and acquaintances soon discover the fresh opportunity for gain. He can advise them to push the completion of a small factory, which, of course, must be taken into the trust. Or, even if he does not give his friends this intimation, capital is always upon the alert, especially when it is bruited about that a trust has been formed, as in the case of sugar, and immediately new sugar manufactories spring up as if by magic. The more successful the trust, the surer these off-shoots are to sprout. Every victory is a defeat. Every factory that the trust buys is the sure creator of another, and so on, *ad infinitum*, until the bubble bursts. The sugar refiners have tried to get more from capital in a special case than capital yields in general. They have endeavored to raise a part of the ocean of capital above the level of the surrounding waters, and over their bulwarks the floods have burst, and capital, like water, has again found its level. It is true that to regain this level a longer or a shorter period may be required, during which the article affected may be sold to the consumer in limited quantities at a higher rate than before existed. But for this the consumer is amply recompensed in the years that follow, during which the struggle between the discordant and competitive factories becomes severer than it ever was before, and lasts till the great law of the survival of the fittest vindicates itself. Those factories and managers that can produce to the best advantage eventually close the less competent. Capital wisely managed yields its legitimate profit. After a time the growth of demand enables capital to receive an unusual profit. This in turn attracts fresh capital to the manufacture, and we have a renewal of the old struggle, the consumer reaping the benefit.

Such is the law, such has been the law, and such promises to be the law for the future; for, so far, no device has yet been devised that has permanently thwarted its operation. Given freedom of competition, and all combinations or trusts that attempt to exact from the consumer more than a legitimate return upon capital and services write the charter of their own defeat. We have many proofs that this great law does not sleep and that it will not be suppressed. Some time ago, as I have stated, the steel rail manufacturers of Europe formed a trust and advanced the price of rails to such an extent that American manufacturers were able for the first and perhaps for the last time to export steel rails to Canada in competition with the European. But the misunderstandings and quarrels, inseparable from these attempted unions of competitors, soon broke the trust. With vindictive feelings, added to what was before business rivalry, the struggle was renewed, and the steel rail industry of Europe has never recovered. It was found that the advance of prices had only galvanized into life concerns which never should have attempted to manufacture rails; and so that trust died a natural death. During the

\* Extracts from a paper printed in the February number of the *North American Review*.



great depression which existed for several years in this country in the steel rail trade many anxious meetings were held under circumstances described in the genesis of trusts, and it was resolved that the plan of restricting production should be tried. Fortunately reaction soon came. A demand for rails set in before the plan went into operation, and, as a matter of fact, no restriction of product was ever attempted, and the steel rail industry was thus saved from a great error. We have recently seen the lead trust of this country shattered and its chief owners bankrupted. The newspapers a few weeks ago were filled with accounts of the convention of the growers of cattle in St. Louis, resolved to break down the combination of slaughterers and shippers in Chicago and Kansas City. No business was poorer in this country for many years than the manufacture of nails. It was overdone. To remedy this the manufacturers did not form a trust, so far as the sale of product was con-

insurance and hardware, and 20 more articles; but the fitting epitaph for these ephemeral creations is

"If I was so soon to be done for,  
I wonder what I was begun for!"

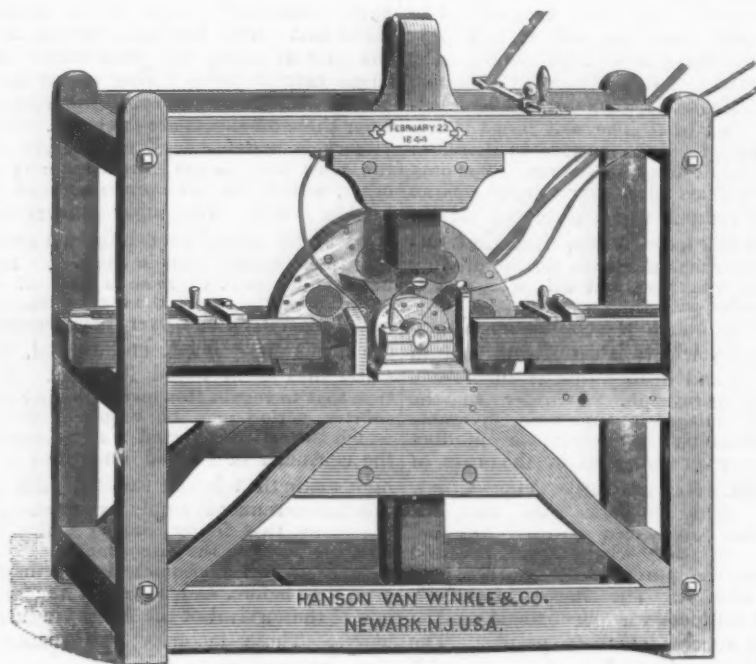
We may exclaim with Macbeth as he watched the shadowy descendants of Banquo filing past, "What, will the line stretch out to the crack of doom?" But as with Banquo's procession, so with trusts, it is comforting to remember that as one approaches another disappears. They come like shadows, and so depart.

The people of America can smile at the efforts of all her railway magnates and of all her manufacturers to defeat the economic laws by trusts or combinations, or pools, or "differentials," or anything of like character. Only let them hold firmly to the doctrine of free competition. Keep the field open. Freedom for all to engage in railroad building when and where capital desires, subject to conditions open to all. Freedom for all to engage in any

brief season indeed, unusual profit upon actual capital invested either in transportation or manufacture, so long as all are free to compete, and this freedom, it may safely be asserted, the American people are not likely to restrict.

#### Electro-Plating Machines.

An interesting story is told by the two engravings which are placed side by side on this page. That to the left represents the initial step in the employment of electricity for the deposition of metals, while the other illustrates the result obtained by nearly half a century's travel along the path pointed out by the first. The first machine developed a current of electricity obtained from steel magnets—an invention founded upon the great discovery of Faraday—and was perfected and first successfully worked by Prime & Son at their large silver-ware works, Birmingham,



THE FIRST ELECTRO-PLATING MACHINE.



THE LITTLE WONDER.

cerned, but they restricted production. A certain percentage of their machines was kept idle. This percentage was increased from time to time, and only the quantity made that the market would take at a certain price. But the result was that there were soon more machines in America for the manufacture of iron nails added to the works than the demand for nails will require for many years to come, and this combination of nail manufacturers went the way of all trusts, and left the business in a worse plight than it was in before.

The Sugar Trust has already a noted competitor at its heels. The Copper Trust is in danger. All stand prepared to attack a "trust" or "combine" if it proves itself worth attacking; in other words, if it succeeds in raising its profits above the natural level of profits throughout the country it is subject to competition from every quarter, and must finally break down. It is unnecessary to devote much attention to the numerous trusts in minor articles which one reads of, a new one appearing every few days and others passing out of existence, because they are all subject to the great law. The newspapers charge that trusts exist or have existed in wall paper, shoe laces, lumber, coal, coke, brick, screws, rope, glass, school-books,

branch of manufacturing under like conditions.

There can then be no permanent extortion of profit beyond the average return from capital, nor any monopoly, either in transportation or manufacturing. Any attempt to maintain either must end in failure, and failure ultimately disastrous just in proportion to the temporary success of the foolish effort. It is simply ridiculous for a party of men to meet in a room and attempt, by passing resolutions, to change the great laws which govern human affairs in the business world, and this whether they be railway presidents, bankers or manufacturers.

The fashion of trusts has but a short season longer to run, and then some other equally vain device may be expected to appear when the next period of depression arrives; but there is not the slightest danger that serious injury can result to the sound principles of business from any or all of these movements. The only people who have reason to fear trusts are those foolish enough to enter into them. The consumer and the transporter, not the manufacturer and the railway owner, are to reap the harvest.

It is not in the power of man to exact for more than a brief season, and a very

England. The original machine was constructed by Woolrych in 1844, and was the first magnetic machine that ever deposited silver on a practical scale. It is preserved at the works of Prime & Son as a valuable and interesting relic. It is related that Faraday paid a visit with some London friends to the works, purposely to see this application of his discovery in practical operation, and expressed his great delight at witnessing so early and extensive an adaptation of his discovery so favorably carried into practical use. This machine was worked for many years, and was finally superseded by one made by Hanson, Van Winkle & Co., of Newark, N. J. The Woolrych machine stands 5 feet high, is 5 feet long and 2½ feet wide. The manufacturers state that the Little Wonder requires only one-tenth the power needed by the other, and that it will deposit ten times as much metal in a given time. It was designed to meet the demand for an inexpensive, simple and powerful source of electricity for plating. All parts of the machine are accessible, there is no danger of a reversal of current, and with the rheostat or resistance on the machine the current can be regulated so as to plate from a single article to a large tank full of work.



### Successful Profit Sharing.

The second year's experience of the Springfield (Mass.) Foundry Company in sharing their profits with their employees shows results much more satisfactory than did the first year. The present dividend was 3 per cent. of the total yearly wages, while the first was 2½ per cent. Regarding the quality of the work executed, there have been fewer poor castings and more better ones. This would appear to overthrow the opinion held by many that it is useless to try to obtain better work by offering the men a portion of the profits, because the conscientious workman will do his best for the firm any way, while the shiftless one cannot be induced by any consideration to alter his methods. It is further argued that, as the shiftless one is certain of obtaining his share of the profits at the end of the year, he really has no inducement to improve, except the satisfaction he would feel at having performed his full duty; and, as he has never been subjected to such a sensation, he is ignorant of its value, and, therefore, not likely to strive for it. If the employer does not adopt profit-sharing for business reasons, he must do it out of pure philanthropy—a qualification not frequently found in relations like these. When he knows he is paying good wages he is not apt to present the recipients of these wages with a portion of his profits in a lump sum at the end of the year.

In the circular issued by the Springfield Company they state that "a noticeable improvement has been manifested in the work and general conduct of our employees during the past 12 months. The average weight of castings has been increased and the proportion of poor work reduced. We have also noticed an increasing interest in the success of the business and a willingness to fulfil every requirement, even though it might be slightly unusual." The company suggested the advisability of the men taking certificates bearing 5 per cent. interest and holding them as a provision against a rainy day, thereby establishing a sort of private sick fund.

A careful account was kept of bad castings, and the loss from this cause was so great that had the castings all been good and marketable "we could better afford to pay you 9 per cent. dividend than we can now to pay 3." The loss on every pound of imperfect casting more than balances the profit on 7 or 8 pounds of perfect castings, this being the case because the margin of profit is so small compared with the whole cost of production. "If our system of profit sharing," they say, "is worth anything at all it must effect more and more reduction in the proportion of imperfect castings every year. This was one of the principal objects of our adoption of the plan, and unless the coming year shows a very material improvement in this regard we shall be obliged to discontinue the sharing of profits altogether. We cannot go before our stockholders and expect them to consent to a division of profits among men who every year lose hundreds of dollars for themselves as well as their employers. And all for lack of care and judgment! We furnish you with the best molding sand we can buy, the hottest of iron, melted from the finest brands of pig to be obtained in the market; our tools, flasks and other appliances are as nearly perfect as they can be made and our foundry is above the average as regards light, convenience and comfort. These conditions do away with almost every reasonable excuse for bad castings and leave scarcely any cause except carelessness, laziness and inattention to your trade. We find no fault with the quality of your good castings. On the contrary, we are

able to say it is first-class, almost without exception. These castings speak for themselves and well merit the excellent reputation they have obtained. They show what you can do. Why not do a little better and have all your work as good?"

Two important changes were made by the company in the rules: only those employed during the whole 12 months will participate in the profits. The second change concerns the molders, who, since they can do much more than any of the others towards reducing the proportion of bad castings, are to receive an extra dividend of 1 per cent. if the reduction should be large enough to warrant it.

### The New Watervliet Arsenal.

Chief Engineer Anthony Victorin, United States Ordnance Department, has practically completed the working plan for the new \$700,000 great gun factory at the Watervliet Arsenal, and the contract will soon be ready for letting. The plans involve a radical departure from anything ever attempted in this country. The great gun works of the world, Krupp's, Armstrong's, and Whitworth's, all devote their energies to other branches of metal manufacture, and such appliances as they possess are to a degree designed to be useful for purposes outside of gunmaking, and have been accumulated as demanded by occasion. At Watervliet every piece of the amount of machinery required will be built from special designs by the Chief Engineer.

The factory is to be erected about in the center of the walled-in field of 109 acres constituting the armory reservation, midway between the Delaware and Hudson Railroad in the rear and the Hudson river in front, and contiguous to the Erie Canal, which traverses the lower portions of the grounds at West Troy. A branch railroad will run from the D. and H. main track right through the middle of the shop, across the canal by a new bridge, to the river front, making it available for connection with the three sources of transportation, and including a siding running into the building.

The gun shop will be 963 feet long, with a width of 128 feet on the north wing and 158 feet on the south. Each wing is to be 400 feet long, and between them will be a central structure covering the rest of the room, to hold two 200 horse-power engines—one for service in each wing—office, tool-room, machinery for assembling the guns, and a shrinkage pit 50 feet deep, with three levels, 20, 35 and 50 feet below the ground.

The north wing, which will be finished first, because Congress has not given money enough for the whole, as economy would have dictated, will be formed of a central structure 75 feet wide and 50 feet to the eaves, connecting through arches 12x38, with an annex 25 feet wide on each side running the length, in which the minor mechanism will be stowed.

This north wing is to be utilized for the construction of cannon from 8 to 12 inch bore, the kind now considered most useful by the Ordnance Board. To this end it will accommodate 15 lathes, ranging from 70 to 105 feet in length, all specially constructed. Manufacturers who bid will be expected to follow out the general design, submitting their own improvements. The lathes in the annexes must largely be newly designed for economical handling of the hoops and breech mechanisms.

Overhead will run two 30-ton traveling cranes, and 30-ton cranes will run on suspended tracks in the annexes. The lift of the large cranes will be 35 feet from the floor. The building will be a single story throughout, of a maximum height of 75 feet. It will be of brick and iron, covered with slate. The south wing will contain

a like number of lathes, but will be given over wholly to the manufacture of 16-inch bore breech-loading rifles. Here Mr. Victorin believes an average of 20 can be made in a year, or 25 at a pinch. The same production of 8, 10 and 12 inch guns is allowed for the south wing.

It will take two years to complete the shop for which these plans are now ready—that is, the center and north wing. The south wing could be built as quickly if there was enough money.

Under ordinary circumstances it requires a year to build a big gun, though when this shop is complete the department feels sure that it can be done in nine months. The steel comes to Watervliet from the Bethlehem foundry, rough forged, oil-tempered and annealed. The work of finishing has been going on for a year at Watervliet under adverse circumstances, but with excellent results. In August, 1887, the department sent Mr. Victorin to the arsenal to rig up a gunshop out of such materials as he could find and set it going. He did it in three months, and, thanks to that move, one 8-inch rifle is now at Sandy Hook, where it has endured over 200 firings and borne every test, while another 8-inch, one 10-inch, and 25 field pieces of 3½-inch bore are almost ready for use. The engineer found at Watervliet two 400-foot sheds of brick built in war time for storehouses. He pulled the ceiling and partition out of one and made a shop of it. Everything in the room is a makeshift, but a pretty good one. The big crane and accompanying derrick were made of a couple of cylindrical posts found at Frankfort Arsenal; the tracks and trusses and crane out of old gun carriages. A shrinkage pit 24 feet deep and 8 inches in diameter was dug out of the rocky floor, an expanding furnace and 60 horse-power engine put in, and in November, 1887, the gun-makers employed went to work, using a 92-foot lathe with 120-inch swing, and a 70-foot with 89-inch swing.

The range of these new 8 and 10 inch rifles is ten miles—equal to that of the best European gun, better than almost anything afloat, and their effective range is eight miles. But the defensive poverty of this country was never more painfully shown than in the fact that it possesses but one carriage fit to accommodate a modern gun. This is holding up the new 8-inch at Sandy Hook. The carriages for the old cast-iron guns are made mostly at the Watertown arsenal. Not one of their patterns will do. A 10-inch gun of Watervliet pattern is 28 feet long, 29½ tons weight, loads with 575-pound shot and 180 pounds of powder; an 8-inch is 24 feet long, weighs 14½ tons, and uses 105 pounds of powder to propel a 280-pound ball. A 16-inch gun should weigh about 50 tons. The charges in all instances are rather heavier than those used abroad. The steel breech-loading field pieces are 7 feet long, 3½ inches bore, use 3½ pounds of powder to a 13½-pound ball, and can hit things three miles off. They weigh but 800 pounds—about one-quarter less than the old brass howitzers. Except for weight of metal carried, these field pieces are about as effective as the old 15-inch columbiads, and can be fired about 25 times as fast. When the big shop is done this impromptu factory will be used for the manufacture of the light field pieces and steel breech-loading siege guns of 5-inch bore and 7-inch howitzers. The old cast-iron cannon are clumsy in comparison with these deadly steel tubes. An 8-inch cast-iron piece, such as grace the harbor forts of New York, carries a 68-pound shot with 28 pounds of powder, with an extreme and uncertain range of four miles, representing a collective energy of 1477 foot pounds, against 6880 developed by its steel rival.

### Radial Drilling Machine.

This drill, in which several new and important features appear, is manufactured by the Putnam Machine Company, of Fitchburg, Mass. The machine has a combination of the two standard systems of driving-belt and gear. The cone has four changes, and the idle pulleys are mounted on eccentrics in such a way that the belt may be tightened without stopping the machine. The back gearing, instead of being at the cone pulley, is placed on the arm, this arrangement not only reducing the parts, but also saving power, as the moving parts and bearings are reduced. The head is moved by a rack and pinion gear, and can be firmly held to the arm at any desired point by means of a friction-clamp operated by a lever. Under the collar of the vertical lifting screw is a ball

must be completed within eight months, but where they are to be built is not yet known. The largest of the guns are 15-inch caliber and the extreme range of fire is one mile. The bid of the gun company was \$395,500.

### The Coke Wages.

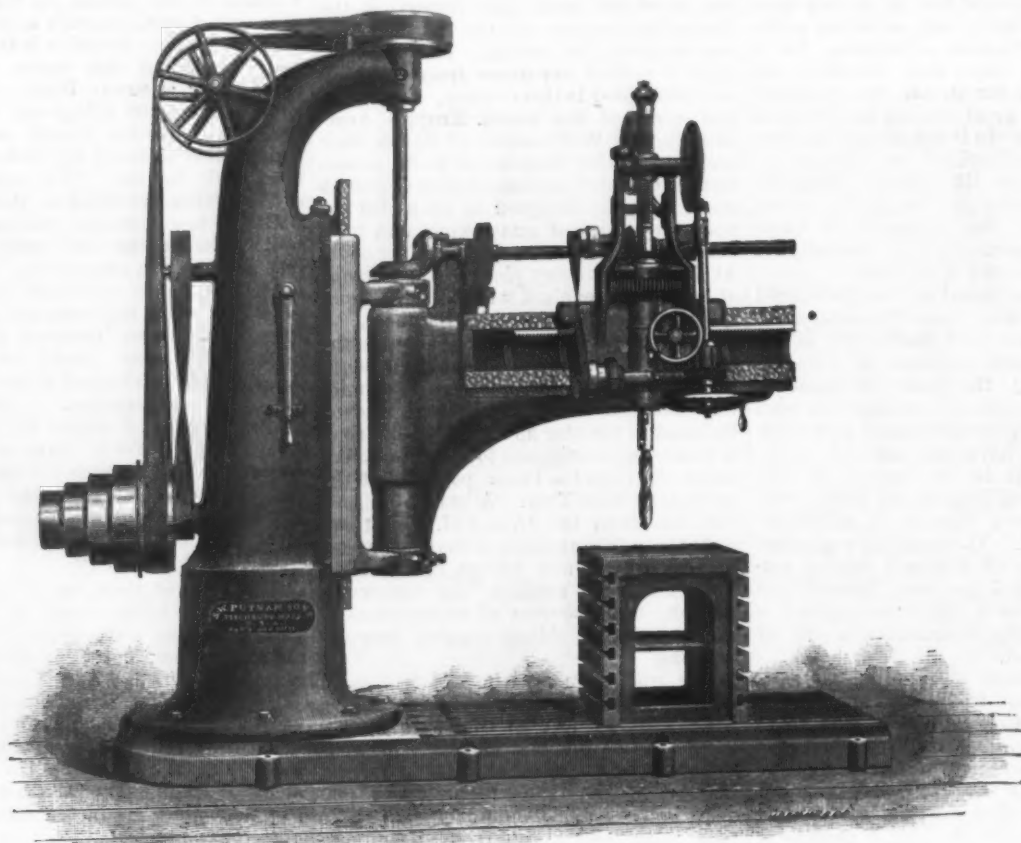
As we predicted in *The Iron Age* of last week, the threatened coke strike in the Connellsville region has not taken place, and, with one or two exceptions, all the works in the region are in operation. In addition to this, we report that the H. C. Frick Company have signed the scale, the same it has been paying for over a year, which is 6½ per cent. higher than the wages paid at the other works in the region. It is to remain in force until January 1, 1890, but contains a provision

Furnace coke, \$1.25; to dealers, \$1.35; foundry coke, \$1.50; crushed coke, \$2.20; all on board cars at ovens, per ton of 2000 pounds.

### Competition of Prison Labor.

The competition of prison labor is a subject treated very cleverly by one of our contemporaries, who endeavors to dispel from the minds of labor organizations the delusion that free labor is injured by the labor of convicts under any proper management. The writer says:

Suppose the 3000 able-bodied men in the prisons of the State were distributed among various productive occupations as industrious and law-abiding citizens. Who would suffer by it? Their production would support themselves, and perhaps help to support others.



RADIAL DRILLING MACHINE, MANUFACTURED BY THE PUTNAM MACHINE CO., FITCHBURG, MASS.

thrust bearing. In the machine illustrated the distance from the face of the column to the end of the arm is 6 feet 2½ inches. The arm has a vertical traverse of 36 inches, and the drilling head has a radial traverse on the arm of 42 inches. The spindle has a range of 16 inches, is counter-balanced and has a quick return by rack and pinion, which is always in gear; it also has hand and automatic feeds of six changes—three for drilling and three for boring. The portable drilling table is accurately planed on all sides; has T slots on top and sides, and is formed with a vertical V groove for holding square or cylindrical work. The base plate is 9 feet 8 inches long, 44 inches wide and 6½ inches thick; it has anchor holes for foundation bolts, T slots, guide hole for boring bars, and is planed on top and bottom.

The Secretary of War has awarded contracts for seven dynamite guns of the pneumatic pattern, similar in construction to that recently tested at Fort Lafayette; three of them to be located at Sandy Hook, two at Fort Schuyler and two at Fort Warren, Boston harbor. The guns

which will permit that concern to revoke the scale on March 15 next unless a uniform scale is adopted throughout the region. There has been no improvement in the demand for coke, and but few works in the region are being operated full time. Four days in the week seems to be the rule. In view of this, it is safe to say there will be no advance in prices for some time, and a slight reduction in the near future is not improbable. There are 77 coke plants in the Connellsville region, and the week ending on February 2 showed 12,551 ovens in operation, 710 idle and 720 in process of erection. The production for that week was estimated at 103,233 tons. During the previous week there were 12,626 ovens in operation, and they turned out 110,958 tons of coke. The shipments for the week before last aggregated 5600 cars, consigned as follows: To Pittsburgh and river points, 1400 cars; to points west of Pittsburgh, 3100 cars; to points east of Connellsville, 1100 cars. The figures for the previous week were: Pittsburgh, 1550; West, 3250; East, 1150; total, 5950. The prices ruling at present are as follows:

Would it be an advantage to the rest to sequester these 3000 men from labor and support them in idleness? If so, why not 10,000 or 100,000? If it would not be an advantage, supposing them to be free men, why is it an advantage when they are sequestered within prison walls for crime? If it would be better for all concerned that they should work and earn their own living if they were at large in the community, why is it not better that they should do so in prison? As a financial matter for the State, of course, it is best that convicts should be self-supporting. As a matter of health and discipline, of physical and moral improvement for themselves, it is admitted to be better that they should be employed in productive industries. As an economic matter for the community, including all workingmen, it is equally an advantage. There is no possible gain in setting apart a percentage of the able-bodied population to be supported in idleness by the rest.

A \$500,000 fire-proof building will be erected in Newark, N. J., by the Prudential Life Insurance Company.



### The "Perfect" Radiator Valve.

A radiator valve designed to overcome the common objections of leaky stems, by which carpets and ceilings are often damaged and other considerable injury occasioned, has just been put upon the market by Curtis & Co., 140 Centre street, New York. In Fig. 1 a general view of the Perfect radiator valve is shown, while its internal construction is illustrated in Fig. 2. The special feature of this valve is that it is made without stuffing box, packing or ground joints, the metal diaphragm shown in Fig. 2 taking the place of those and preventing the leakage of water. The diaphragm is made of phosphor-bronze, which, as is well known, is a very strong and durable alloy. By the use of this diaphragm and by means of the lever-arm arrangement, a slight movement is sufficient to open the valve. The valve shuts off with a pres-

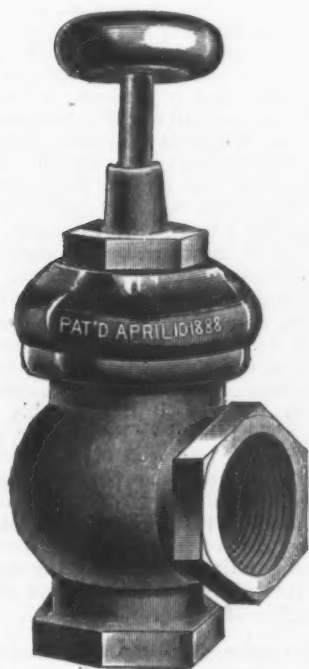


Fig. 1.—General View of Valve.

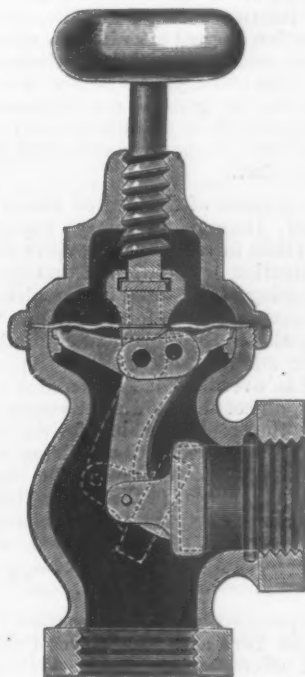


Fig. 2.—Sectional View.

### THE "PERFECT" RADIATOR VALVE.

sure behind it, making it absolutely tight at the seat. It is stated that a test of two years has established the reliability of this device, and has proven the fact that it will not leak. The manufacturers further state that the valves open and close easily. The Perfect radiator valve is made in ten different styles, of  $\frac{1}{4}$ , 1,  $1\frac{1}{2}$ , and  $1\frac{3}{4}$  inch size.

G. W. Hunt, one of the principal contractors and railroad builders of the Pacific Coast, has been spending some time in Chicago recently, arranging for future operations. He is now completing the Seattle, Lake Shore and Eastern Railroad, with his headquarters at Walla Walla. D. C. Black, formerly with the Morden Troy and Crossing Company, of Chicago, is now acting as Mr. Hunt's secretary, and accompanies him on his Eastern tour.

The New Jersey Central is to have a new steamer for the accommodation of the Sandy Hook business during the coming season, to be named the Sandy Hook. This steamer will be 270 feet in length and 48 feet in width, with a draft of 9 feet forward and 10 feet aft. She is to be a

twin-screw propeller of 3000 horse-power and 931 tons burden, and will carry about 2500 passengers.

### The Farm Value of Crops.

The aggregate value to producers of the five principal cereal crops at the average farm prices, as ascertained by the Agricultural Department, for the two years has compared as follows:

	1888.	1887.
Corn.....	\$677,000,000	\$646,000,000
Wheat .....	385,000,000	310,000,000
Oats.....	195,000,000	200,000,000
Rye.....	14,000,000	13,000,000
Barley.....	33,000,000	29,000,000
Total.....	\$1,304,000,000	\$1,198,000,000

Here is an increase of more than \$100,000,000 in the amount realized by farmers from the sale of their cereals. The abund-

all these items with the approximate accuracy attainable in reference to the cereals, but there is ample evidence that the aggregate value of all the products of the farms for 1888, as realized by the producers, has been very materially greater than for 1887, and that to this extent the present situation is better than a year ago, and the agricultural interests more prosperous. The effects of such an improvement necessarily extend to every class of the community.

### The Carload Lot Cases.

There is reason to believe that the so-called carload lot cases will be decided by the Interstate Commerce Commission very soon. As the matter stands, the plea of the complainants is virtually covered by the following brief statement:

We complain especially and particularly of an unjust discrimination in freight charges as between carloads and less than carloads, on the following specific articles: Coffee, cider, sugar, paint, liquors, prunes, crockery, salt and pickled fish, canned goods, soda and saleratus, pickles, salt and molasses, and generally of the unjust discrimination by means of carload rates on any sort of freight where the normal unit of shipment is the commercial package. If the theory, urged *pro re nata* by the railroads, that the amount of difference in the tariffs for different quantities of these specific articles can be justified and should be determined by the actual difference in the cost of transportation, be accepted by the commission, then it is of uttermost and essential importance to the public who pay the charges that the actual difference in each particular case can be accurately and precisely ascertained before the theory be applied to the tariff. It is our contention, therefore, that inasmuch as the burden of proof is upon the railroads to justify these differences for quantity in freight rates, they should be held strictly to the issue, and should be required either to furnish definite information upon the alleged great difference in the cost of transportation—which they confess and everybody knows to be impossible—or to defend their rates upon some other theory, and the respondents have had nearly a year since the complaints were filed to ascertain the facts.

The defendant railroad companies, in reply to this, allege that the difference in cost of transportation of large and small shipments justifies the discrimination in rates. This assertion is supported by general arguments, but without detailed exhibits of actual cost of service in the various classes of which complaint is made.

The Senate Committee on Claims last week heard a delegation of iron mill men in support of a bill now pending in both Houses of Congress. The bill proposes to repay the importers of steels, chiefly in the Allegheny and Mahoning Valley districts the difference between a duty of 45 per cent., which was collected, and one of 35 per cent., which they claim a decision of the Supreme Court holds to be the correct duty. The amount involved is about \$600,000. W. S. Groome, of the firm of J. F. Bailey & Co., New York; R. F. Downing and H. E. Collins, of Pittsburgh, addressed the committee. They were unable, however, not being lawyers, to cite the Supreme Court decision upon which they rest their claim, and a postponement was had in order to enable them to present it to the committee.

The New York, Susquehanna and Western Railroad will extend its coal shipping facilities, and, as a step in this direction, it has begun the erection near Two Bridges Station, N. J., of a large system of coal shutes, covered by a building 1000 feet long and having a storage capacity of 200,000 tons. Two Bridges is 63 miles from New York.

The contract for constructing a dry dock at the Philadelphia Navy Yard was awarded to J. F. Simpson & Co. at their bid of \$548,700.



## THE WEEK.

The navigation of the Hudson River at Newburg was closed by ice on Thursday, February 7, and ice began to obstruct the bays on rivers on Long Island Sound, for the first time this season.

The Dock Board have authorized their chief engineer to remove all vestiges of the site of West Washington Market by moving back the shore line 200 feet, and extending two piers 620 feet into the river for the accommodation of ocean steamers. The docks rent at from \$25,000 to \$45,000 per annum.

Ex-Consul Sewall, of Samoa, contends for a vigorous policy, representing that the seizure and deposition of Malietoa was in pursuance of a deliberate plan on the part of Germany to obtain control of Samoa; that this step is only the precursor of measures to secure foreign supremacy in the Hawaiian Islands, Lord Salisbury being a party to the scheme, and that no protest from the United States will turn Germany from the course it is steadily pursuing.

After spirited discussion, the Nicaragua Canal bill passed the House with unexpected unanimity, the vote standing 177 to 60. The event was signalized by a burst of applause unusual in that body, warranting the inference that the Panama Canal failure, together with events in Samoa, have assisted very much in removing objections to the bill and have invested the subject with a new interest. The bill as passed contains every provision which the promoters of the enterprise desired. The United States is not committed to any pecuniary liability on account of the company, but it requires the company to make a yearly report, giving such detailed statement of their affairs and of their assets and liabilities as may be required by the Secretary of the Interior. This provision, in connection with the reservation by Congress of the right to amend the act at any time, gives the company the benefit of the moral support of the United States in all their legitimate undertakings. The Senate agreed to the conference report, and the bill now goes to the President for his approval.

It is computed that the car-drivers' strike in this city cost \$1,700,000, of which \$1,500,000 was sustained by the retail trade. The loss of the car companies is put down at \$117,000 and the strikers about \$50,000.

A false report that a car-building firm in Detroit had received a large order was followed by a "deluge of letters" from iron firms and supply companies desirous of bidding for the work, which fact was construed as an indication of general dullness and low prices in the iron trade.

A feature in the enlarged Philadelphia Mint, for which Congress appropriated \$200,000, will be a marble tower 40 feet square.

A large freight and transfer station, probably the largest in America, will be erected in the environs of Pittsburgh for a syndicate representing railroads on either side of the Ohio river, and by means of a bridge secure uninterrupted transportation. Another great union depot is to be built at Pueblo, in Colorado, for the Missouri Pacific, Rio Grande and other companies. The structure will be of red sandstone and cost about \$250,000.

The oil producers of Pennsylvania are encumbered with an accumulation of 3,500,000 barrels of the crude article, which they expect to sell eventually for nothing less than \$1 per barrel.

The Hudson Street Electric Railway, to extend across the city from the Fulton

ferry to the Cortlandt street ferry, is expected to be in operation May 1, the right of way on the west side having been secured, and all the requisite materials are contracted for. It will run 20 cars.

The American Institute is losing money, as the result of its annual exhibitions in this city. At the annual meeting of the trustees in this city last week the surplus in the treasury was nearly \$15,000, but a member of the board stated that expenditures during the last five years had exceeded the receipts to the extent of \$35,000, and that in five years more the surplus will be exhausted.

American stoves are so far superior to those in common use in large parts of Europe that manufacturers here might reasonably expect to find markets abroad sufficiently ample to absorb all their possible surplus. But a difficulty exists in the inferior coal consumed on the Continent. Not long ago a Pittsburgh manufacturer shipped a lot of stoves to Germany, and being informed that they failed to give satisfaction learned after investigation that the coal used produced many clinkers and slag. The better grades of coal were too expensive for general consumption. A variety of artificial substitutes can be had, but as a rule economy is consulted rather than comfort.

The proposal of the United States Government, through Secretary Bayard, to bring about international co-operation for the reduction or abolition of tonnage dues on shipping has resulted in complete failure, excepting as information may have been gathered for the guidance of the incoming administration. The replies received to overtures in furtherance of the general object show a disinclination to entertain the proposal, mainly for the reason that the "favored nation" clause of existing treaties would prevent the abolishment of all charges in the case of the ships in one country and not of those in another. Several countries have no merchant marine in the foreign trade, and consequently there could be no reciprocity.

The proposed railroad to parallel that of the New York and New Haven Company would afford an acceptable addition to traffic facilities, however much it may be opposed by certain special interests. Some of its advocates are directors in the New York and New England Company.

Yellow fever is making progress in Brazil, and the open winter on our Atlantic Coast affords a reasonable admonition that the disease may extend northward during the approaching summer.

The Alaska Commercial Company have paid into the United States Treasury since the "Seward purchase" was completed \$8,000,000. Russia received for the whole country \$7,200,000.

The price of American wheat being materially affected at times by the crop in India gives interest to facts concerning the agricultural progress of India. Efforts which are making through an agricultural department established at Bengal to improve the quality of wheat indicate the probability of increasing competition from that quarter. In 1872 India rose to the second place as a feeder of Great Britain, and in 1877 the relative positions as concerns the United States were maintained, but trade returns for 1888 show a startling revolution in the figures. Russia has taken first place, sending 21,398,000 cwts. as against 5,523,000 cwts. during 1887, this increase being almost entirely at the expense of America, the falling off in the imports from the United States amounting to 15,857,000 cwts., while India has exported within 325,000 cwts. of the preceding year; and it is worth noting, as pointed out by Sir James Caird in the London

*Times*, that this change of basis in supply has been accomplished without in any material degree advancing the price of bread in England.

English manufacturers complain that the exceedingly low wages of German operatives make competition almost impossible. The North British *Mail* says: "Among the operatives in Saxony weekly wages have fallen in a most marvelous manner—indeed, it appears that while the better-class operatives in the mills are obtaining 10 marks per week for their labor, others devoted to the less skillful operations are actually not receiving more than about 5½ marks per week. It is almost impossible to conceive that this state of things can get any worse."

In Japan, as in China, events are impending which must give shape to the future policy of those empires and have a direct bearing upon their relations with other Governments. While it is probable that the recent progressive tendencies of China have already provoked reaction, as evinced in the recent hostility to foreign influence, the Mikado of Japan is leading off in the direction of more radical innovations. Seven years ago, in response to popular petition, he resolved to call a National Assembly in 1890 for the purpose of organizing a constitutional government. In accordance with this purpose the draft of a constitution was prepared and recently was submitted to the Privy Council, consisting of 20 members, besides eight Ministers of State as ex-officio members. Five princes of the royal family and seven other members, representing the people, but appointed by the Mikado, made up this council, of which Ex-Prime Minister Ito was chairman. The Mikado assumed to establish the constitution by his own power. The Liberal, or Progressive, party was in favor of leaving it to the Assembly, while the Government party, composed chiefly of nobles, opposed this. The latest information is that despite all obstacles the constitution was promulgated last Monday, inaugurating a new era in the empire. Count Ito will be entitled to rank as the Washington of Japan.

A dynamite bomb, placed under the north foundation wall of the malthouse of Daniel Stevenson's boycotted ale and porter brewery, at the corner of Tenth avenue and Fortieth street, by some unknown miscreant, exploded with terrific force on Friday afternoon. The solid rock on which the malthouse is built was torn up to the depth of 30 inches, and a hole was blown into the 24-inch foundation wall. For 200 feet in a northeasterly direction every house was more or less injured by the concussion.

The Pacific Guano Company, of Boston, capital \$1,000,000, made an assignment to John C. Ropes. It had extensive facilities in South Carolina and at Wood's Holl, Mass. Glidden & Curtis, the company's selling agents in Boston, were carried down in the crash. John M. Glidden is president of the Ohio and Western Coal and Iron Company.

The freight rates on iron articles from Pittsburgh to all points between St. Paul, Minneapolis and Minnesota Transfer were advanced last week from 2 to 3 cents per 100 pounds. White lead and paints were also advanced about the same.

It is reported that contracts have been closed between a large ore company in Cleveland and the Northern Steamship Company, owned by President Hill, of the Manitoba Railroad Company, for the transportation of ore freights for the next season from the head of Lake Superior to Lake Erie ports at \$1.25 a ton.

## MANUFACTURING.

### Iron and Steel.

The report that the plant of the Elba Iron and Bolt Company, Limited, at Pittsburgh, recently started up under lease by Henry Darlington, of that city, had closed down for an indefinite period is without foundation. The works are being operated full time in all departments.

By direction of Manager Wick the plant of the Warren Steel and Iron Company, at Warren, Ohio, was closed down last week for an indefinite period. The management recently received an offer to remove the works to Girard, but whether this caused the shut-down or not is not known.

It is announced that the plant of the Cartwright Iron and Steel Company, formerly known as the Alikanna Rolling Mills, at Steubenville, Ohio, is being extensively improved and will shortly be put in operation. The product will be taken by the National Tube Works Company, of McKeesport, Pa.

Application has been made for a charter for the Duquesne Forge Company, of Pittsburgh. The company is composed of R. S. Smith, Alex. McKim, John Bissell and others, who have purchased the plant and interests of the Miller Forge Company, Limited, located at Rankin Station on the Baltimore and Ohio Railroad, about 10 miles from Pittsburgh. Plans are being prepared for some extensive improvements. New machinery will be put in and some new buildings will be erected so as to nearly double the present capacity of the works.

Fred Bishop has resigned his position as superintendent of the plant of the Warren Iron and Steel Company, at Warren, Ohio.

The plant of the Virginia Nail and Iron Works Company, of Lynchburg, Va., is situated about 3½ miles above Lynchburg, on the Richmond and Allegheny Railroad. The works consist of a blast furnace, 65 x 12 feet, equipped with two iron-pipe stoves; Weimer engine, three cylinders, 48 x 36 inches, driven by water-power; a rolling mill, 20-inch muck train, 18-inch plate train and 10-inch bar and guide train, seven double puddling furnaces and one M. V. Smith gas heating furnace, and a nail factory with 46 machines. The metal is run from the blast furnace into large ladles mounted on cars, which are run over tracks, turn-tables, &c., to the puddling furnaces, and poured by tipping into the furnaces. The ladles are controlled by worm-wheels, on which are marks to regulate the charge. About 40 minutes are saved in making a heat over the time required to melt the pig iron and make it. Having water-power, the gas not needed for the stoves is piped over to the Smith furnace, and the company can heat, for both the plate and the bar trains. The ores come from above and below the works along the river, limestone from Indian Rock, on the R. & A., and coke from either the Norfolk and Western Flat coal-field or the Chesapeake and Ohio New River region. The arrangements for the molten metal and the gas for reheating are of the simplest kind. The ladles are run down an incline by the side of the blast furnaces so that the metal can be run into them. The gas is conveyed in an 18-inch plate-iron pipe from the down-comer into the mill, which is just below the blast furnace.

Morris P. Canfield and Robert A. McKean, of Pittsburgh, having secured the title and good-will of the Pittsburgh Construction Company, have associated themselves together under the name of the Pittsburgh Construction Company, for

the purpose of carrying on the constructing and engineering business in all its branches. They have also been granted license by M. V. Smith to construct the Smith regenerative gas furnaces and producers. The new firm are located in the Hamilton Building, in the above-named city.

On January 1 of this year the Steel Car-Wheel Company of Boston started a small Bessemer plant, which was built for them last year by James P. Witherow, of Pittsburgh. The plant consists of a 3-ton tilting converter. The product will be a metal patented by the company, and will be chiefly used in making car-wheels. The works of the company are at the corner of First and I streets, Boston.

Work has been commenced on the erection of the new plant of the Union Steel and Iron Company at St. Joseph, Mo., and it is expected to be ready for operations by May next. M. V. Smith, of Pittsburgh, is consulting engineer for the company.

The Green Nail Works, at Tiffin, Ohio, were totally destroyed by fire on the morning of the 6th inst. The loss is estimated at \$50,000, with no insurance. The plant had but recently commenced operations.

A company to be known as the Dickson Car-Wheel Company have been incorporated to manufacture car-wheels at Houston, Tex.

The Standard Rolling Mill, at Minneapolis, Minn., has been torn down. It was idle in 1887 and 1888. Its annual capacity was 1200 net tons of bar iron. The only other rolling mill in the State, the Capital Iron Works, at St. Paul, was also idle in 1888.

On account of a lack of orders, the rolling mill of the Kittanning Iron Company, Limited, at Kittanning, Pa., has closed down for an indefinite period. The firm manufacture muck iron principally, which is consigned to Pittsburgh. The blast furnace of the company continues in operation.

R. Heckscher & Sons' Swede Furnace, at Bridgeport, Pa., of which Alfred Walters is superintendent, has eclipsed its former records by making 604 tons of pig iron last week.

The Scranton Steel Company, at Scranton, Pa., rolled 252 rails, 5½ pounds to the yard, in one hour. So far as is known this beats the record for rolling in that length of time considerably. With heavier rails, of course, the tonnage, too, would have been exceptional.

Park Brothers & Co., of Pittsburgh, have recently completed an additional large open hearth steel furnace.

The Etowah furnace, at Gadsden, Ala., we are advised by Rogers, Brown & Co., made 850 tons in the seven days ending February 5, and is now averaging close to 130 tons per day, 85 per cent. of which is foundry grades. John Dowling, for many years at Rising Fawn, the best known furnaceman in the South, is superintendent. Col. R. B. Kyle, of Gadsden, is president.

A rumor is in circulation that the Joliet Steel Company have notified their men of a 12 per cent. reduction. The management deny this, and state that not a word has been said in regard to a reduction of wages. The mill closed on the 9th inst. for three weeks for repairs, as is usual once a year. During the shut-down the management will consider with the employees the question of adopting the sliding scale, or a rate of wages based on the price of rails—rising as rails rise and lowering in like proportion with the falling in the price of rails.

The Midvale Steel Company, of Philadelphia, Pa., have been awarded the con-

tract for furnishing all the tires to be used on the New York Central and Hudson River Railroad and the West Shore Railroad during the year 1889.

The rail mill of the Cleveland Rolling Mill Company, at Cleveland, Ohio, has been started up, the men accepting a reduction of wages.

On Saturday, the 9th inst., notices were posted on every furnace in the Mahoning Valley, Ohio, notifying the employees of a 10 per cent. reduction in wages, to take effect on March 1, next. An advance of 10 per cent. was made last November, but the furnacemen claim that the present prices of pig iron will not justify them in paying it at present. It is thought the men will agree to accept the reduction.

The Brooke Iron Company, at Birdsboro', Pa., on Saturday gave notice of a reduction in puddlers' wages of 25 cents per ton, from \$3.25 to \$3. The mills at Pottstown and other places recently made similar reductions.

The Bethlehem Iron Company, of Bethlehem, Pa., have called a general meeting of the stockholders on Tuesday, February 19th, at 12 o'clock noon, for the purpose of making and adopting by-laws. On the same day there will also be a special meeting of the stockholders for the purpose of voting for or against an increase of the capital stock from \$2,000,000 to \$3,000,000, or to such amount not exceeding \$3,000,000 as may be approved at said meeting.

About 100 men in the Bessemer department of the Otis Iron and Steel Company, Cleveland, have been laid off on account of a falling off in orders.

The new plant of the Muncie Nail Company, at Muncie, Ind., is nearly completed, and all departments are expected to be at work before the 1st of March. The product will be merchant bar, steel nails and muck iron. They have 16 puddling furnaces, four heating furnaces and capacious annealing furnace. Their machinery includes a 20-inch train of rolls, a plate train, muck train and 50 nail machines. They also have a complete foundry for iron and brass castings, and a cooper shop for the manufacture of kegs, use natural gas throughout the mill, and will employ about 200 hands.

Edwin Mickley, superintendent of the mining interests of the Thomas Iron Company, of Hokendauqua, Pa., for the past 32 years, has resigned his position, to take effect on March 1, next.

The Lewis Foundry and Machine Company, Limited, Pittsburgh, have the contract in hand for a new rolling mill to be located at Rome, Ga. The same company have just shipped to Anderson, Ind., the machinery for a Garrett rod mill, with all of the latest improvements made by Mr. Garrett.

For the five weeks ending on February 2 the two stacks of the Isabella Furnace Company, at Etna, Pa., produced 15,526 gross tons of pig iron.

Hanson, Van Winkle & Co., of Newark, N. J., the first to introduce in this country dynamo-electric machines for depositing metals, have published a large catalogue of their electro-plating and polishing material and machinery. They fittingly introduce their catalogue with an illustrated description of the Woolrych electro-plating machine built in 1844, and then show the improvements found in the machines of to-day. After fully describing their products they close with an extended list of users of their machines and materials.

### Machinery.

The Milton Mfg. Company are refitting their rolling mill at Milton, Pa., and are putting in nut and washer ma-



chinery. Heretofore they have made only bar and hoop iron. The company were reorganized in 1888, and now consist of S. J. Shimer, president; E. S. Shimer, secretary and treasurer, and G. S. Shimer, superintendent.

L. D. Pollard has been succeeded by Hoskins & Shepardson in the manufacture of engines, boilers, iron and wood working machinery, special saw-mill machinery, &c., at 14-18 South Canal street, Chicago. The new firm is composed of E. J. Hoskins and D. A. Shepardson. The establishment is of long standing, having been founded in 1868.

A. B. Bowman, St. Louis, Mo., reports his January business as being considerably more than January of 1888, and, judging from the number of orders already received, this month will well stand a comparison with the corresponding month of last year. His sales include engines, boilers, planers, lathes, &c. He has also one or two large lots which are under negotiation, but which he expects to close in a few days.

Shultz Belting Company, St. Louis, report an active state of affairs so far as they are concerned, and say they have no reason to complain for want of business. They have lately received a number of large orders from the South and Southwest.

W. P. Davis Foundry and Machine Tool Works, of North Bloomfield, N. Y., has opened a salesroom and office at 169 Mill street, Rochester, for the sale of machine tools, engines and boilers. This will facilitate the making of quick shipments by various routes. The North Bloomfield works will be run as usual; now they are run on full time and with a full force of men. In a short time Mr. Davis will bring out a large key-seating machine entirely new in design and well suited for large machine shops.

The Skinner Chuck Company, New Britain, Conn., have increased their capital stock from \$12,000 to \$36,000. The additional capital was called for by an increase in the business, which has been established less than two years. The company advise us that they are at present behind their orders, but with the increased facilities now being obtained hope to be able to meet the demand promptly.

Gould & Eberhardt, the tool builders, of Newark, N. J., write us as follows: We report recent shipment of Eberhardt's patent automatic gear cutters and drill presses to the noted tool shops at Koping, Sweden, and also to Kharkoff, Russia. This we take as an indication of the increasing favor with which the better class of American tools are looked upon in foreign countries.

We have received an inquiry from Wm. E. Peck, 17 Cedar street, New York, as to where to buy machinery for the manufacture of buttons of all kinds.

We have received a communication from Robertson, Lloyd & Co., of Durham, N. C., in which they state that they want a "shop machine for cutting threads further back on the axle" than usual. "In this section, where sand is so abundant, the boxes of wheels are very soon so badly cut that washers will not stop wheels from rattling, and the idea is to cut the threads of spindle further back."

The Goulds Mfg. Company, of Seneca Falls, N. Y., wish to communicate with manufacturers of noiseless gears.

#### Hardware.

About two weeks ago the employees of the wire department of the Braddock Wire Company, at Rankin Station, Pa.,

were notified of a reduction of 17 per cent. in wages. A meeting of the employees was called at once, at which it was decided to resist the reduction, with the result that that department was idle for several days. The matter was finally compromised by the firm withdrawing the original demand and proposing a reduction of 8 per cent., which was agreed to by the workmen, and operations were again resumed. The reduction does not affect the employees of the roll department.

The W. G. Avery Mfg. Company, Cleveland, Ohio, have recently increased their facilities for turning out their hardware specialties, and hope to be able to fill orders promptly.

During the past year Malin & Co., Cleveland, Ohio, moved into new quarters and built machinery which doubled their capacity, so that they are now in a position to meet the enlarged demand for their goods. The full capacity of the shop, they advise us, is 2000 feet of wire per minute, or over 3,000,000 spools a year. In addition to their manufacture of wire they are making arrangements for the manufacture of other patented wire specialties which they expect before long to put on the market.

At a recent meeting of the stockholders of the Bryden Horse Shoe Company, of Catsauqua, Pa., the following Board of Directors was elected to serve for the ensuing year; David Lydig, New York; Justice Cox, Jr., Philadelphia; Charles K. Barns, Philadelphia; J. W. Fuller, Catsauqua; W. P. Hopkins, Catsauqua. At a meeting of the directors held subsequently Charles K. Barns was elected president, Oliver Williams, treasurer and secretary, and T. F. Fredericks superintendent.

#### Miscellaneous.

The Perry Stove Company, Nathan B. Perry, president, and John T. Perry, secretary and treasurer, announce that they have purchased from the firm of Perry & Co., of Albany, their foundry property on Van Rensselaer Island, and their machinery, equipment and the good-will. They will continue to manufacture the Argand stoves and ranges.

The Clearfield Coal Company, Tylers, Clearfield County, Pa., have just started their new washing plant. About a year ago their old plant burned down. The company decided to build again on a much larger scale, increasing the number of coke ovens from 30 to 100, with a new set of the Stutz crushing and washing machinery, having a capacity of 300 to 400 tons daily. S. Stutz, who also built the old plant in 1882, has since made many improvements. The coal makes a fine coke, which finds a ready market. A. K. Jacobs, C. E., is superintendent, and has charge of the works.

#### The Duty on Steel Rail Crop Ends.

Assistant Secretary Maynard has informed a firm of New York importers that the question recently decided in the Supreme Court in the case of Robertson against Perkins, was simply to the effect that as steel was a metal specified in the tariff acts, steel rail crop ends cannot be classified under the provision for "metal unwrought not specially enumerated or provided for." The question as to whether such ends or pieces of steel rails are dutiable as "steel not specially enumerated or provided for," or as "scrap steel," was not, he says, presented in that case, but was covered by a previous decision of the Court in the Schlesinger case. This decision, he says, is the basis of Department's ruling of February 14, 1887, that such merchandise having been in actual use in making the rails, is dutiable under the provisions for "scrap

steel." The Department therefore declines to apply the decision in the Perkins case to certain steel rail crop ends heretofore imported.

#### Ore Roasting at Lebanon.

C. W. Davis, Jr., when connected with the Katahdin Charcoal Furnace, in Maine, was forced by the necessity of making a chilling iron from ores high in sulphur to make a long and exhaustive study of the question of thoroughly roasting iron ore. Starting with the Westman kiln, the Davis-Colby kiln was finally developed. This has lately been put up at the Colebrook furnaces of Robert H. Coleman, at Lebanon, Pa., where one of the 24 Gjers kilns was remodeled. Mr. Davis introduced some modifications in the design of the kiln as built at Katahdin, the principal features of novelty being that the furnace gas is introduced in two zones, one below the other, each, of course, having its own supply of air for combustion. The ore is charged in an annular space left between the lined shell and the center flue, which is carried up and into a draft stack. This facilitates the charging of the ore. At the Colebrook furnaces the furnace gas was taken from the down-comer at a point before it enters the hot-blast stoves, by a 15-inch pipe, which is carried over the stock-house to the kiln, a distance of about 250 feet. A slide valve in the pipe was open only to the extent of leaving a 5-inch sector, the quantity of gas thus available being, it is reported, sufficient to roast about 75 tons daily, after the kiln had been heated through thoroughly. We understand that the roasted ore carried about 0.5 per cent of sulphur. We understand that five more kilns have been ordered, and that, besides, three large kilns, 20 feet in diameter and 20 feet high, are to be built at Cornwall.

The Ohio and Western Coal and Iron Company filed an assignment in this city on Monday to James A. Hall, without preference. The deed of assignment conveys to the assignee all the lands, furnaces, buildings and appurtenances of the company, subject to a mortgage to the Boston Safe Deposit and Trust Company. The deed is signed by Chester Griswold, vice-president, and George C. Thomas, secretary. The president, John M. Glidden, was of the firm of Glidden & Curtis, of Boston, who failed last week, and their failure precipitated the assignment of the company. According to *Bradstreet's* reports the Ohio and Western Coal and Iron Company is a reorganization of the Standard Coal and Iron Company, which was sold out under foreclosure in 1883, and was bid in by D. N. Stanton, Thomas T. Mason and George Chapman, who held it as trustees pending the organization of the Ohio and Western Coal and Iron Company. This company was incorporated under New York State laws, October 25, 1883, with a capital stock of \$5,000,000, and bonded debt of \$3,500,000. *Bradstreet's* reports of April 28, 1887, said the company is not "understood to be earning its interest account as yet, and it is being nursed along by those holding its securities, which are largely owned by banks, savings banks and trust companies. Its future depends on the disposition of its managers." According to the company's annual report on January 16 the liabilities were \$3,309,000, of which the bonded debt was \$2,399,000, and other debts, with collateral security, \$910,000. The assets consist of 7000 acres of coal land in the Hocking Valley, Ohio, valued at \$400 to \$500 per acre; about 300 houses, 3 large stores, 400 railroad cars, 4 miles of track, 3 coal mines fully equipped, 4 furnaces and a large amount of miscellaneous equipments.

# The Iron Age

New York, Thursday, February 14, 1889.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.  
 CHAS. KIRCHHOFF, JR., - - EDITOR.  
 GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.  
 RICHARD R. WILLIAMS, - - HARDWARE EDITOR.  
 JOHN S. KING, - - - BUSINESS MANAGER.

## Our Imports of Iron and Steel.

The Bureau of Statistics has just issued its December report, showing the imports of merchandise for the calendar years, from which we compile the following table:

Imports of Iron and Steel, Gross Tons.

	1888.	1887.
Iron Ore.....	586,756	1,194,301
Pig Iron.....	196,892	467,522
Iron Scrap and Old Rails..	44,799	313,405
Steel Scrap.....	9,179	26,532
Bar Iron.....	31,745	36,219
Iron Rails.....	21	241
Steel Rails.....	60,939	137,588
Cotton Ties.....	30,305	21,675
Hoop, Band Scroll Iron....	256	69
Steel Hoops, sheets or plates.....	23,411	24,004
Steel Blooms, Billets, Slabs or Bars.....	103,687	310,551
Sheet, Plate and Taggers Iron.....	6,239	7,153
Tin Plates.....	297,862	283,836
Wire Rods.....	101,812	149,368
Wire and Wire Rope.....	3,169	2,899
Anvils, Axles and Forgings	1,177	1,316
Chains.....	829	914
Totals.....	912,322	1,783,282

Excluding ore, there has been a falling off in the tonnage of our imports from 1,783,282 in 1887 to 912,322 tons in 1888. Omitting the tin plates, since we do not yet make in this country, the decline has been from 1,499,446 tons to 614,460 tons. It is probably best, however, to take into account the iron ore. Assuming that its iron contents average at least 50 per cent., we have a decline from 2,100,000 tons of iron and steel, in the raw and partly manufactured state, to about 910,000 tons. This is statistically a very rough way of putting it, but it gives numerical expression to a very important fact. Its significance would be emphasized if it were possible to show to what extent purchases for future delivery have been made a year ago and now. From a close study of the markets we feel convinced that the quantities of foreign material purchased during the past few months are very small indeed. The importations during the current year promise to be very small, and it may be truly said the market is practically in the hands of our manufacturers. Were the demand this year to be only as large as it was in 1888, then our home works would be called upon to produce enough to cover the falling off in imports. Unless there is a very sudden and a very material drop in prices abroad, of which there is not the slightest prospect now, there will be no danger of an invasion of foreign material. That fact in itself counts for a good deal. It leaves us to adjust by ourselves the balance between supply and demand. The former is, at present prices, critically near a sharp curtailment, while the latter is aided by the vigorous stimulant which admittedly low prices always prove.

Consumption during the year 1888 was certainly surprisingly large, considering the condition of the rail trade. Taking

into account production, the imports, and a very slight apparent decrease in stocks, the quantity of pig iron absorbed was not less than 6,689,399 gross tons. Let it be conceded that the odd 89,399 tons are Bessemer pig not accounted in the report of stocks unsold but accumulated by the rail mills; then we have in round numbers a consumption of 6,600,000 gross tons. We believe that the low prices now ruling will aid the growth of consumption of the thousand small articles which go into the hands of the masses, and which, though singly small, make up the great aggregate which surprised those who last year kept their eyes riveted on the rail trade. An improvement is possible without that branch of the industry, and the year 1889 may prove it, in spite of all gloomy prognostications. We have gone a little too fast lately and are now suffering for it. But it does not by any means follow that an adjustment may not be quickly made and the spring see a revulsion of feeling. Competition from abroad is certainly not to be feared, and that, of itself, is an important gain.

## Unrestricted Reciprocity.

Stirring events are believed to be impending in Canada, as an outcome of the long-continued agitation on both sides of the boundary line in favor of improved commercial relations with the United States. The signal for action is the promised retirement from public life, at the end of the present parliamentary session, of Sir John Macdonald, Premier, leader of the Government party for the greater part of the last forty years. He is to be succeeded by Sir Charles Tupper, now Canadian Commissioner in England. Already R. W. Scott, the opposition leader in the Senate, openly declares in favor of unrestricted reciprocity. To the same effect, and still more significant at the present juncture, is the declaration of Sir Richard Cartwright, who, like Sir John, is a veteran statesman, and has for many years maintained a struggle against the conservative forces representing the Crown. In the Parliament at Ottawa, 7th inst., Mr. Cartwright gave notice of his intention to move the adoption of the following resolution:

That it has become a matter of extreme importance to the well-being of the people of the Dominion that the Government and Parliament of Canada should have the power of negotiating commercial treaties with foreign powers, and that an humble address be presented to Her Majesty praying that she will empower her representative, the Governor-General of Canada, to enter, by agent or representative of Canada, into direct communication with any foreign states for the purpose of negotiating commercial arrangements tending to the advantage of Canada, subject to the prior consent or subsequent approval of the Parliament of Canada, signified by an act.

This is interpreted as meaning that the independence of Canada shall be so far recognized by the Imperial Government that the Dominion shall be empowered to negotiate directly with Washington in regard to commercial relations without the intervention of the Crown. As the question stands, public opinion is much at variance, so that, while not a few advocate the removal of all barriers to traffic, others are protectionists in the strictest and most radical sense, others still clamor for "reciprocity," "commercial union,"

or "annexation," according to their individual proclivities or special interests. Withal, the opposition have no recognized leader. Sir Charles Tupper, as a member of the fisheries conference, gave evidence of being a skilled diplomatist, and, being yet in his vigor, is looked upon as well qualified to grapple with any question that may arise.

## The Precious Metals in 1888.

Silver opened last year in the London market at 44½d per ounce and never again attained that figure during the whole twelvemonth, the lowest point reached being 41½d on May 19. Thence the course was upward, and it rapidly recovered to 42½d, continuing with few fluctuations until October and November, when the range was 43½d to 43½d, the year winding up at 42½d, the decline for the year thus being 2d. The course of prices is best shown in the following table:

Average Price.

January.....	44½	July.....	43½
February.....	44	August.....	42
March.....	43½	September.....	43½
April.....	43 11-16	October.....	43 1-16
May.....	43 1-16	November.....	43
June.....	42 1-16	December.....	42½

The average for the year being 42½d.

Previous Yearly Averages.

1876.....	52½	1882.....	51½
1877.....	54 13-16	1883.....	50 9-16
1878.....	53 9-16	1884.....	50½
1879.....	51½	1885.....	48½
1880.....	52½	1886.....	45½
1881.....	51 11-16	1887.....	44½

The price on February 9, 1889, was 42½d.

There has been an active demand for gold in London, especially for Brazil, the Argentine Republic, Spain, Russia and the Cape of Good Hope. The total export from London during the year was £14,250,000, against £3,700,000 in 1887, while the import was £15,000,000, against £10,000,000. The silver movement was considerably less, the export not exceeding £7,500,000, as compared with £7,620,000 in 1887; while there was imported £6,000,000, against £7,680,000. To supply with gold the countries named the United States had also to be drawn upon heavily, causing a general gold drain, which brought about a material advance in the discount rates in Europe, and during November was looked upon with some apprehension in Wall street.

Germany was last year the country that escaped the gold drain more than its neighbors, the local demand there being chiefly for the yellow metal, while but few 20-mark pieces were exported. It was different in France, the bank losing 100,000,000 francs. The situation of monetary matters was quite unfavorable there as regards silver, a good deal of it being shipped to that country from Italy and Belgium, so that an accumulation in the vaults of the banks of France took place to the amount of 1,228,000,000 francs. The bank now holds, included in the above amount, no less than 300,000,000 francs of Belgian and 250,000,000 Italian 5-franc pieces, with which it can do nothing for the time being under the arrangement with the Latin Union so long as the latter is not dissolved. In fact, the Bank of France has been seriously hampered at times in its dealings with French bankers and merchants owing to these 550,000,000 francs being blocked up



in a foreign coin, for which it cannot enforce reimbursement in available gold coin.

In England the metallic gold reserve declined last year, reduced to francs, from 498,000,000 to 484,000,000 francs, despite the £750,000 excess of import above given. The total import and export movement of gold during the past 30 years exhibits some interesting changes, having been in millions of pounds sterling as follows:

	Import.	Export.
1858-1861.....	69.8	58.4
1862-1866.....	93.9	65.8
1867-1871.....	87.1	59.8
1872-1876.....	103.8	84.7
1877-1881.....	69.1	80
1882-1887.....	60	66
Totals.....	492.7	414.7

In Italy the national banks and banks of issue had last year an increase of 36,000,000 francs in gold, but the Government absorbed 44,000,000 francs in the same coin, leaving as security 44,000,000 of old Bourbon silver dollars. The amount of 5-franc pieces held in bank on December 31 last was 56,950,000 francs, of which 8,780,000 francs were coins of other nations belonging to the Latin Union. Spain has been a buyer of gold for the coinage of new alfonso's.

The Imperial Bank of Russia held at the close of 1888 28,463,000 roubles in gold, and only 7,290,000 roubles in silver. In the United States there were coined last year \$32,000,000, silver, exceeding the gold coinage of the year by a trifle, the amount of silver dollars accumulated in the Treasury now amounting to \$315,000,000, while the total amount of gold held in the country is \$700,000,000, of which the Treasury holds \$325,000,000. The United States produced last year \$34,000,000 of gold and \$55,000,000 of silver. In 1887 the gold production was \$33,000,000, and that of silver \$53,000,000. It does not appear likely that the Bland bill will be repealed this year, and the coinage of silver under its provisions will continue. Therefore the producers and holders of the white metal appear safe enough. At the same time, the report of the British Commission has raised the hopes of bi-metallists, and there is quite a clamor on their part, both in Germany and England, in favor of a renewed attempt at negotiation between those two countries to arrive at some agreement about the re-establishment of a silver standard alongside of the gold standard. We doubt whether any thing practical will result from this renewed agitation of the silver question, since the majority of the solid financial men in England feel convinced that the renewal of the silver standard is impracticable. Whatever the hopes and assertions of English and Continental bi-metallists may have been, it may be taken for granted that England will decline a representation at a new international coinage congress, and without England nothing can be done.

The Western people are anxious to build up new industries, and are not disposed to wait for the slow process of natural selection or the fitful action of private enterprise. A bill was introduced in the Wisconsin Assembly last week providing for an appropriation of \$15,000 to establish and maintain a station, with the necessary mulberry orchards, &c., to give a thorough trial of the practicability of silk culture in that State. A strong sentiment in favor

of the movement is reported to exist among the citizens. In the same week a bill was passed by the Kansas House of Representatives to encourage the manufacture of sugar in that State by enabling municipalities to vote bonds to aid in the construction of sugar factories. Any city of the second class is to be permitted to subscribe not over \$20,000, and any city of the third class, or township, or village, \$10,000. The voters are to pass upon the question at any general or special election. So strong is the popular sentiment in favor of this stimulus to the manufacture of sugar in Kansas that the bill was passed in opposition to the advice of leading lawyers, who insisted that the measure was unconstitutional.

#### Comparative Freight Rates on Coal.

The Interstate Commerce Commission are now busy hearing the evidence in the complaints of Coxe Bros. against the Lehigh Valley Railroad. The first complaint, that undue advantage in rates is given the Lehigh Valley Coal Company, has no great interest for the general public. The second complaint involves a question of importance to all users of coal. It is charged and admitted that this carrier, like all other coal roads, makes a large difference in freight rates between anthracite and bituminous coal. Coxe Bros. claim serious damage from this distinction, which they allege to be an unjust discrimination against themselves and in favor of all miners of soft coal. They demand that both kinds shall be carried by the railroad at the same tariff per ton per mile.

The question of comparative freight rates upon two articles which are more or less competitive, while a new one in the United States, has been already raised abroad. A case much like the present one was decided some 15 years ago in England. The Caledonian Railway had different rates for different descriptions of coal—a gas-coal rate and a common-coal rate. A colliery owner who shipped cannel coal, which was charged the higher rate, brought an action against the company. It was shown that gas produced from splint, or common coal, was inferior in quality and quantity to that produced from an equal amount of cannel coal. The court held, however, that splint and cannel coal had enough of gas producing quality in common to be competitive, and the cost of carriage being the same they must be transported at the same rate per ton per mile. If we accept this decision as conclusive it follows, of course, that Coxe Bros. must win their case, and that a higher rate upon anthracite is an injustice to it and an unfair favor to bituminous coal.

These English cases cannot, however, be unquestionably accepted as governing principles in this country. The English Railway Commissioners have been led into too much dependence upon mere cost of service as a test of all disputed cases. It will not do to say that because two shipments cost the carrier the same money that therefore the rates should be the same. Such a theory would compel dry goods and iron to be transported at the same tariff per ton, as is the rule in Germany. Our whole American system has been built up on the opposite theory of

value of service, that each article should be charged what its transportation was worth to the owner. A striking instance of the application of this theory is the tariff charged on ore bullion between Denver and Omaha. If it assays less than \$100 to the ton the rate is 25 cents; if it assays more than \$100 per ton, but the shipper is willing to agree to put that valuation upon it in case of loss, the rate is 35 cents; if shipper forwards at the actual valuation exceeding \$100 the rate is 75 cents. The attempt is here clearly made to have the railroad share in the profits accruing to the owner of the high-priced ores. The English decisions condemn this style of tariff making, and not a few of our own writers think it savors of confiscation, but, nevertheless, it is in accord with the principles to which our national railroad prosperity is largely due. The reason why so many of our cheap goods can be carried at such low rates (half the average European rate) is because the shipments which can afford a higher rate are charged accordingly.

If the rule of value of service be applied to the present contention, the justice of the claim that anthracite of all sizes be carried as low as bituminous becomes more than doubtful. It is true that the use of hard coal for manufacturing has decreased greatly, but much of this is owing to other causes than excessive freight rates; indeed, the changes in tariffs followed the changes in trade, and not *vice versa*. More and more is it apparent that for manufacturing our reliance is upon bituminous coal, and it is to be feared that any arbitrary arrangement of freight rates upon any other theory would only result in higher rates and higher prices upon steam-producing coal to our already burdened manufacturers. If an average must be struck, freights on the lower and cheaper qualities must be raised.

This applies more particularly to the larger sizes of anthracite now used almost exclusively for domestic purposes. As to the smaller kinds—such as buckwheat, and even culm—there is no doubt that their consumption for steam raising could be largely increased were they carried and sold at prices competitive with soft coal. It may be said that the solution of the difficulty may lie just here—that the carriers recognize a distinction between anthracite for domestic and for manufacturing use. Such a plan might relieve the miner of his surplus now stored about the mines, while at the same time granting a wider choice to certain factories and works. But to ask or expect that all sizes and kinds of coal, of whatever price or for whatever use, shall be carried at one and the same rate would be to put back the usefulness of our railroads to the crudeness of early times.

An encouraging feature of the Western trade situation is the increased business now reported by the railroads. Freight officials connected with the lines radiating from Chicago, particularly to the West and Northwest, state that their business has picked up rapidly in the past two weeks. The average improvement in the quantity of freight carried on these lines is estimated at 25 to 30 per cent. This is a very decided gain and the change is visible in every quarter affected by railroad interests. Freight solicitors were

but recently as important as sellers of second-hand clothing, while now they are recovering their usual dignity and do not plead for the business of small shippers. The decreased tonnage on some of the leading Western lines affected them so seriously that they were obliged to curtail the number of freight trains very heavily, thus reducing their employees and adding to the number of idle persons in the country. These trains are being restored as rapidly as the demand for freight room warrants, and a beneficial effect cannot but follow over a very broad expanse of territory. Manufacturers of railroad supplies are watching the changing conditions eagerly, believing that only a slight improvement is needed to encourage the railroads to make extensive repairs.

The post office appropriation bill represents a total of \$66,600,000, and among the items are upward of \$19,000,000 for railway service, as compared with the paltry sum of \$655,000 for foreign mails. A more liberal system for the encouragement of ocean mail transportation, looking to the ultimate benefits to be derived from the extension of our foreign commerce as a result of rapid and direct postal communication rather than to the costs of maintaining the service, is a subject which there is reason to believe will receive attention at an early day. The revival of American shipping, building up foreign markets and providing adequate facilities for communicating with foreign ports are interests that are one and inseparable. While other commercial nations are reaching out over the seas in all directions, establishing trading stations and founding colonies, merchants and manufacturers in the United States cannot afford longer to rest satisfied with passive inaction.

#### New York Exports for 1888.

The details of the Custom House statistics relating to the exports from the port of New York during the year ending December 31 show that there were shipped mowers and reapers valued at \$1,496,457; plows and cultivators, \$430,511; brass and manufactures of brass, \$202,214; clocks valued at \$1,028,427; 22,309 tons of copper ore and copper matte, \$2,781,419; copper, ingots and bars, 30,809,278 pounds, to the value of \$4,785,131, and other items as follows:

	Quantity.	Value.
Pig Iron (2,240 pounds) tons.	735	\$15,077
Band, hoop and scroll iron, pounds.	57,855	2,214
Bar iron, pounds.	354,920	8,933
Car wheels, No.	8,186	74,675
Castings, not elsewhere specified.		111,902
Cutlery.		90,728
Firearms.		552,776
Ingots, bars and rods of steel, pounds.	301,360	12,822
Locks and other builders' hardware.		1,050,928
Machinery, not elsewhere specified.		7,011
Nails and spikes, cut.	8,325,000	8,567
Nails, wire, horse-shoe, tacks, &c., pounds.	1,161,522	124,405
Iron plates and sheets, pounds.	4,465,454	185,534
Steel plates and sheets, pounds.	38,233	2,097
Printing presses and parts of.		120,323
Steel railroad rails, tons.	5,000	173,451
Saws and tools.		1,729,565
Sewing-machines and parts.		1,825,989
Locomotives, No.	38	228,708
Stationary steam engines, No.	246	122,550
Steam boilers and parts of engines.		162,066
Stoves, ranges and parts.		190,979
Wire, pounds.	12,753,916	442,541
Iron and steel, all other manufactures of.		1,458,867

## The Blast Furnaces

February 1, 1889.

As was to be expected, the demoralization in the iron and steel trades during January has led to some restriction of output, although thus far the relief is not great. It has come chiefly in the direction of blowing out of furnaces making Bessemer pig connected with rail mills. Thus the Bethlehem Iron Company entered February with only two of their seven stacks in blast, while the Union Steel Company, of Chicago, put out the three of their furnaces which had been at work for some time past. In all, the reduction of output of anthracite and coke furnaces combined is from 142,064 tons weekly on the 1st of January to 137,089 on the 1st of this month. A number of our correspondents, whose plants are ready to resume, report that they will allow them to remain idle while the markets are in the present condition. Others are not likely to make long-time purchases of raw materials at present prices, so that should their furnaces begin to work badly they can put them out without any complications of contracts entered into. One of the closest students of the situation, with exceptional facilities through his location for watching the drift of events, while acknowledging that for the first time in many months he is piling up iron, expresses the belief that a better feeling will prevail within 60 days. In fact, the first indications of it are said to be manifest even now.

For the anthracite furnaces we have the following data:

Anthracite Furnaces February 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.	24	11	3,491	13	3,792
New Jersey.	15	5	2,530	8	2,362
Spiegel.	3	2	239	0	0
Pennsylvania:					
Lehigh Valley.	44	25	9,472	19	6,463
Spiegel.	1	1	70	0	0
Schuylkill Valley.	38	23	8,494	15	3,880
U. S. Susquehanna Valley.	17	11	3,543	6	1,256
Lebanon Valley.	16	13	6,778	3	1,193
I. S. Susquehanna Valley.	22	13	4,780	9	2,050
Total.	178	107	30,187	71	21,016

For a year past our records show the following:

	Furnaces in blast.	Capacity per week.
February 1, 1889.	107	30,187
January 1, 1889.	107	30,726
December 1, 1888.	95	34,879
November 1.	95	33,645
October 1.	95	33,723
September 1.	92	33,541
August 1.	93	33,397
July 1.	92	32,478
June 1.	90	32,418
May 1.	96	31,008
April 1.	94	30,466
March 1.	98	28,598
February 1.	97	29,989
January 1.	118	38,206
December 1, 1887.	122	39,487
November 1.	124	40,028
October 1.	123	39,440
September 1.	125	38,338
August 1.	129	37,930
July 1.	138	40,742

In New York and New Jersey no change has taken place. In the latter State the figures for the capacity at work have been increased in accordance with the higher position, as a producer, occupied by the Andover Furnace, in the Lehigh Valley. Bethlehem, as already noted, is running only two furnaces. In the Schuylkill Valley Marion blew in on the 10th, and Norway on the 16th ultimo. One of the Pioneer furnaces was to be blown out early in this month. The small furnace, which has not been running for some time, is to be rebuilt. On the Upper

Susquehanna the same plants are producing, to which was added, on the 10th ultimo, the Marshall, which has been remodeled and re-equipped.

In the Lebanon Valley No. 2 Sheridan has chilled. One of the Bird-Coleman stacks is still undergoing repairs. Otherwise the district is busy, as usual.

The coke furnaces opened February with the following status:

Coke Furnaces February 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.	3	1	1,191	2	2,100
Pennsylvania:					
Pittsburgh district.	17	16	20,320	1	318
Spiegel.	1	1	611	0	0
Shenango Valley.	19	15	10,386	4	2,806
Juniata and Conemaugh Valley.	19	11	5,282	7	2,400
Spiegel.	1	0	0	1	430
Youghiogheny Valley.	5	4	1,051	1	600
Miscellaneous.	4	3	1,710	1	650
Maryland.	12	0	0	12	370
West Virginia.	6	3	2,165	3	538
Ohio:					
Mahoning Valley.	14	11	8,066	3	2,783
Central and Northern.	18	13	9,041	5	3,746
Hocking Valley.	14	8	3,038	6	1,340
Hanging Rock.	13	9	2,177	4	960
Indiana.	12	7	383	5	0
Illinois.	12	7	8,512	5	4,318
Spiegel.	1	1	642	0	0
Wisconsin.	4	2	957	2	1,260
Missouri.	6	1	594	5	2,130
Colorado.	2	1	490	1	450
The South:					
Virginia.	12	9	4,005	3	2,117
Kentucky.	4	3	1,000	1	229
Alabama.	21	18	10,067	3	1,300
Tennessee.	11	10	4,914	1	250
Georgia.	2	1	501	1	275
Total.	212	150	97,518	62	27,518

As compared with previous months, these figures stand as follows:

	No. of furnaces.	Capacity per week.
February 1.	150	97,518
January 1, 1889.	157	108,726
December 1.	151	101,748
November 1, 1888.	146	94,686
October 1.	137	85,461
September 1.	133	81,082
August 1.	122	74,855
July 1.	121	69,543
June 1.	128	75,427
May 1.	130	75,815
April 1.	128	70,644
March 1.	128	68,802
February 1.	136	73,912
January 1.	143	80,101
December 1, 1887.	144	88,835
November 1.	151	90,459
October 1.	152	89,123

In the Pittsburgh district Clinton is out, and two Eliza furnaces have ceased operations. This, however, has been more than counterbalanced by the heavy output of the Edgar Thomson furnaces, which have been producing close to 10,000 tons a week in January, not counting the furnace which is on spiegel and ferro. In the Shenango Valley Neshannock, which stopped on the 28th of December, is still out. Rosena continues its heavy product, having made in January close upon 1200 tons of iron in a week. Nothing new is reported from the Juniata and Conemaugh valleys except that No. 2 Rockhill is to begin work during the latter half of this month. Among the furnaces grouped under "miscellaneous" one stack has stopped for repairs.

In Maryland Catocin is banked, and is stocking up on ore. In West Virginia the majority of the plants were running light in January. In the Mahoning Valley Grace resumed in January, but, on the other hand, Thomas lost stock-house and hoisting-house by fire on the 10th ult. They are being rebuilt of iron, and production was expected to begin again on or about the 20th of this month. In the Hocking Valley there have been no changes. We may note, however, that B Floodwood has done some very good work, making an average of a little over 1000 tons of iron per week, which is far above the record of any other



furnace in the district. In the Hanging Rock region Sarah blew in on the 23d ult. and Wellston was also added to the list of producers during January.

In Illinois the three large furnaces of the Union Steel Company have stopped, thus reducing the active capacity of the State by about 2800 tons a week. In Wisconsin Minerva is out. In Missouri one of the stacks of the St. Louis Iron and Steel Company has blown in.

In the South Kentucky shows a lessened output through the blowing out of No. 1 Ashland. In Alabama Mary Pratt has gone out for repairs. On the other hand, Williamson was blown in toward the end of the month.

The Tennessee Coal and Iron Company are running every one of their completed furnaces in Alabama and Tennessee, nine in number, and producing at the rate of 23,000 tons per month. Trussville and the second De Bardeleben are the only two new furnaces which will begin work in the near future.

The status of the charcoal furnaces on the 1st of the month was as follows:

Charcoal Furnaces February 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England.....	14	8	605	6	495
New York.....	10	3	361	7	570
Pennsylvania.....	23	5	450	18	624
Maryland.....	8	4	389	4	250
Virginia.....	23	3	111	21	335
West Virginia.....	3	0	0	3	165
Ohio.....	18	6	414	12	863
Kentucky.....	1	1	80	1	75
North Carolina.....	1	1	70	1	70
Tennessee.....	9	3	725	6	1,205
Georgia.....	2	1	60	1	54
Alabama.....	10	8	1,608	2	470
Michigan.....	25	11	3,517	14	3,370
Minnesota.....	1	0	0	1	180
Missouri.....	3	2	594	1	150
Wisconsin.....	10	4	1,484	6	810
Texas.....	1	1	146	0	0
California.....	1	0	0	1	210
Washington Ter.....	1	1	270	0	0
Oregon.....	1	1	275	0	0
Total Feb. 1.....	167	62	11,219	105	10,406
Total Jan. 1.....	169	67	11,946	102	9,822
Total Dec. 1.....	169	71	12,286	98	9,397
Total Nov. 1.....	169	73	12,724	96	8,941
Total Oct. 1.....	175	71	11,619	104	9,083
Total Sept. 1.....	176	67	11,243	109	10,004
Total Aug. 1.....	176	65	11,137	111	10,095

There are no new developments in New England or in New York. In Pennsylvania we may note that Pine Grove Furnace has blown out, to be relined from the foundation to the tunnel head. The heating surface of the hot-blast stove is to be enlarged, and a system is to be introduced of enriching the gas for the hot oven and the boilers by the addition of oil spray under heat and pressure. In Maryland No. 1 Maryland Furnace is to be put into blast at an early date. In Virginia Walton stopped on the 11th ult. In Kentucky Hunnewell ceased operations on the 20th. In the Hanging Rock region the number of producers has been lessened by the blowing out, for a new hearth and general repairs, of the Bloom Furnace.

In Michigan Martel stopped on January 5, leaving only 11 stacks producing. Official reports from every one of them show the January output to have been 15,906 gross tons, some of the furnaces doing particularly good work. In the South La Grange went out for repairs, while in Alabama Tecumseh is again at work. The Old Alcalde Furnace, at Rusk, Texas, blew in on January 24. On the whole, the tendency is toward a smaller output of our charcoal plants for the present. The opening of navigation will, however, later on lead to a resumption of operations by a number of furnaces in the Northwest.

**A Pittsburgh Board of Trade.**—A committee, consisting of some of the most prominent citizens of Pittsburgh, have

sent a circular letter to a large number of business men of that city, asking their co operation in the formation of a Board of Trade, such as exists in other large cities. The committee believes that the city of Pittsburgh, owing to its vast industries and great mercantile developments, demands an organization of this kind. It is proposed to secure a central location and erect a building thereon similar to those used by boards of trade in other cities, and of sufficient size to accommodate the Chamber of Commerce and the Grain, Coal, Coke, Builders' and Grocers' exchanges. The recipients of the letters are requested to give their views on the subject, and at the same time say how much money they would be willing to subscribe to such an enterprise.

### Copper Production in U. S. in 1888.

#### PRELIMINARY STATEMENT.

David T. Day, geologist in charge, Division of Mining Statistics and Technology, Washington, has issued the following preliminary statement of copper production and consumption in the United States in 1888, by C. Kirchhoff, Jr., agent U. S. Geological Survey:

From returns obtained from the majority of producers, and checked and supplemented by full reports from nearly all the refiners in the country, the following preliminary estimate of the production of copper in the United States is compiled:

#### Total Copper Production in the United States.

	1887.	1888.
Pounds.	Pounds.	
Lake Superior.....	75,471,890	86,404,993
Arizona.....	17,720,462	31,797,300
Montana.....	78,699,677	97,897,968
New Mexico.....	283,664	1,631,271
California.....	1,600,000	1,170,021
Colorado.....	2,012,027	1,221,100
Utah.....	2,500,000	2,131,047
Wyoming.....		232,819
Nevada.....		50,000
Idaho.....		50,000
Maine and New Hampshire.....		
Vermont.....	200,000	271,631
Southern States.....		18,301
Lead desilverizers, &c.....	2,432,804	2,618,074

Total domestic copper.....	180,920,524	235,494,425
From imported pyrites and ores.....	3,750,000	4,909,156

Total (including copper from imported pyrites.....)	184,670,524	230,403,581
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The production of the principal Lake Superior mines was as follows, December fine copper yield being estimated by the producers from known output of "mineral":

#### Production of Lake Superior Copper Mines, 1887 and 1888.

Mines.	1887.	1888.
Pounds.	Pounds.	
Calumet and Hecla.....	46,016,123	50,401,367
Quincy.....	5,603,691	6,300,000
Osceola.....	3,574,972	4,130,085
Franklin.....	3,915,838	3,645,720
Allouez.....	885,010	300,000
Atlantic.....	3,641,865	3,976,000
Central.....	2,199,133	1,750,000
Copper Falls.....	560,000	1,160,000
Phoenix.....	11,000	
Huron.....	1,484,103	2,370,857
Ridge.....	84,902	50,895
Wolverine.....	2,300	
National.....	25,187	
Tamarack.....	7,396,529	11,411,325
Keamsarge.....	21,237	831,856
Evergreen Bluff.....		26,888
Sundry companies—tributers.....	50,000	50,000
Total.....	75,471,890	86,404,993

The production is even now proceeding at a greater rate, and a very considerable increase is expected should prices continue at or near the present level of about 16½ cents for Lake copper, unless the French syndicate and the mines whose product it has contracted for agree upon some reduction of output. It is reported that on January 1, 1888, the stock in the hands of the

syndicate in this country was 59,000,000 pounds. This includes fine copper in matte and ore in transit and at works, with the exception of some Anaconda material.

Of the total quantity of copper produced in the United States in 1888 about 158,000,000 pounds was refined in this country.

#### Consumption.

Consumption has undoubtedly fallen off, although not to the extent which was probably widely expected. Reports from 109 consumers—among them nearly all the great copper and brass rolling mills and the leading brass foundries, including also large new concerns which did little or nothing in 1887, like the Tamarack and Osceola Mfg. Company and the Hartman Steel Company—reports from these works show an aggregate consumption of new copper in 1888 of 76,124,641 pounds, against 82,458,378 pounds in 1887. This indicates a falling off of 7.68 per cent. The true effect of high prices is, however, more correctly appreciated when the fact is taken into account that the very rapid rate of increase in copper consumption of former years has been overcome. In 1887 this increase amounted to 14 per cent. The condition of general business in 1888 was favorable enough, so far as the consumption of metals in this country was concerned. The quantity of lead and spelter absorbed showed the effects of a natural growth, and leaving out of account the lessened consumption of steel rails, the quantity of iron and steel which found its way into the hands of purchasers was normal. These facts admit of drawing the inference that the cessation of a natural increase of and the substitution therefor of a notable decrease in the consumption of copper in the United States was due directly to the abnormally high price for the metal established through the operations of the French syndicate. It must be distinctly stated that the figures for the consumption given do not cover more than a part of the quantities absorbed in the United States. They are believed, however, to represent very closely the true ratio which would be reached were it possible to obtain the complete data. The principal ground for this belief is the fact that all the important industries into which copper enters as a raw material are represented in the returns by the majority of the concerns, large and small.

#### Southern Pig Iron Freights.

The Queen and Crescent route has issued Tariff No. 11, of rates on pig iron, which took effect on February 1. We give below the rates to the principal points, per ton of 2268 pounds:

From	Dayton and Rockwood, Tenn.	Chattanooga, Tenn.	Rising Fawn, Ga.	Attalla, Bessemer, Birmingham, Gadsden and Wheeling, Ala.	Florence and Sheffield, Ala.	Anniston district.
To						
Buffalo.....	\$4.05	\$4.25	\$4.50	\$4.75	\$4.50	\$4.75
Chicago.....	3.55	3.75	4.00	4.00	3.75	4.25
Columbus.....	2.80	3.00	3.25	3.50	3.25	3.50
Detroit.....	3.55	3.75	4.00	4.00	3.75	4.25
Indianapolis.....	2.80	3.00	3.25	3.25	3.00	3.50
Kansas City.....	6.49	5.49	5.49	5.49		
Louisville.....	3.05	2.25	2.50	2.50	2.25	2.75
Milwaukee.....	3.95	4.15	4.40	4.40	4.15	4.65
Omaha, Neb.....	5.63	5.83	5.83	5.83		
Pittsburgh.....	3.95	4.15	4.40	4.65	4.40	4.65
St. Louis.....	2.80	3.00	3.25	3.25		
St. Paul.....	5.18	5.38	5.63	5.63		
Toledo, O.....	3.30	3.50	3.75	4.00	3.75	4.00
Wheeling.....						
W. Va.....	3.95	4.15	4.40	4.65	4.40	4.65
Wilmington, Del.....	5.45	5.65	5.90	6.15	5.90	6.15

The furnaces classed under the Anniston district by us include Anniston, Clifton, Jenifer and Ironaton.

## Pig Iron Warrants.

### OPINIONS OF THE TRADE.

One of the leading topics of discussion among iron makers, commission merchants and others interested in the iron trade has been the plan of creating American pig iron warrants. With the object of affording an opportunity to ascertain the attitude of different branches of the trade, and in various sections of the country, *The Iron Age* has called upon a large number of leading pig iron makers, iron manufacturers and commission merchants to express their opinions. Beginning, then, first with the manufacturers of pig iron, we print below

#### What Southern Makers Say.

The managing director of a large Southern iron company puts himself on record as follows:

The main benefit of pig iron warrants would be in providing a market for iron when prices are, from any cause, unduly depressed. The great want now is cash buyers for iron to be delivered promptly, and if a system having the approval of the financial world could be adopted it would offer a form of investment much more secure than many forms now in favor, such as stocks and bonds, the real value of which is in a good many cases not above question. I believe there are a great many capitalists in the country who have more or less interest in and acquaintance with the iron industry, and when iron is low in price these would be glad of an opportunity to invest their money, and would do so with less hesitation than it requires to buy some of the paper investments that are always being temptingly offered.

There have been sold to the public in the past two or three years through the medium of the Stock Exchange and through financial houses many millions of dollars of stocks and bonds of iron enterprises that promise to turn out very poor investments. How much better it would have been if this financial current could have been diverted into iron itself, where there would be an opportunity of profitable investment. Certainly the principal would be safely invested, if nothing more. It is evident that those who have invested in the stocks and bonds of these iron enterprises will fare badly. When investors learn of the misfortunes that have overtaken some of the Sheffield adventures and a late one at Nashville there is reason to fear the effect will be disastrous to other investments of like character that are not based upon a solid foundation.

The institution of the warrant system in the pig iron trade would do much to check the tide of disaster arising from the unwise and hasty investment of capital in joint stock companies in the iron trade, by affording capital an opportunity to take a part in carrying iron stocks for the furnaces which they themselves have not the means to hold. Sooner or later the truth will be made known regarding the manufacture of pig iron in this country. I think there has been very little profit in the business, even to those best situated for its economical manufacture, and that iron has generally been sold without profit for some years past. Such an institution as you mention will be the means of letting daylight into the trade, and I believe it would have a wholesome effect if the public generally should get acquainted with the business through the warrant system. I believe it would prevent unwise expansion, and result finally in putting the iron manufacture upon a solid foundation once more.

I know there are a great many objections to the proposed warrant system, but such objections are not made by those who take a broad view of the question, nor will they stand if critically examined in the light of large business experience. One of the principal objections is that if the public become buyers at low prices they will also appear as sellers when prices are advanced, and such stocks will be thrown on the market, thus preventing a rise. I do not take any such view of it. This country has grown wealthy in the past 20 years, and there is an abundance of money which should be wisely distributed in all the channels of trade. In no other business is it true that the producers have to bear the whole burden of manufacturing and distribution and take all the risks of credit, as is done in the iron trade. The introduction of public capital would be of vast assistance in this respect, and 1,000,000 tons or 2,000,000 tons could be easily carried, and would form a reserve stock which would not be thrown upon the market unless there was a great rise, and then, in all probability, the public would let go very slowly. A reserve stock of 1,000,000 tons would not, in my judgement, prevent a fair rise in price of, say, \$5 per ton when trade conditions were favorable. It might prevent a \$10 advance, which would perhaps be undesirable. It would form a great balance-wheel sorely needed, preventing such very low prices as we have had in the past four years; also preventing the foolish speculation of which we had a sample in 1880. From every point of view I can only commend the scheme as one of great good to the iron trade. In fact, I believe that those who most earnestly advocate it now, even from selfish motives, have but slight conception of the benefits that will arise from it when it is properly understood, and it will take some years before they realize it.

The president of a Southern works, interested in furnaces and rolling mills, writes:

I am inclined to think that the operation of the warrant company would be beneficial, rather than otherwise, to the producers of pig iron. One difficulty now is that there is no elasticity to the trade. You can gather what I mean from this: Supposing the cost of iron to be \$13 at the furnaces. If this can be put in storage for, say, 25 cents per ton, and warrants issued to the amount of, say, \$10 per ton, which can be used as collateral for getting money, it will obviate the necessity of the furnaces selling ahead to any such extent as they do at this time. The furnaces could easily carry \$3 per ton, or the difference between the security value of the warrants and the cost of the iron, whereas they could not carry the whole \$13, and are compelled to realize whatever the price is in order to meet maturing obligations. This would enable furnaces to hold their iron when prices were below cost, and use warrants as collateral, and thus be relieved without sacrificing their product, as they are compelled to do now. Very few furnaces have any working capital, especially in the South, and are unable, according to the present conditions of things, to borrow money in the cheaper centers, and they cannot carry their immense output on the limited banking capital at the trade centers here; whereas, the storage warrants would enable them to go to the Eastern markets and borrow money, and thus carry on their business without, as I said before, this enormous loss. I believe, further, that it will enable the furnaces to get together and determine approximately on a price at which they will sell, whereas, this is impossible under the present mode of selling through agents, as the furnaces have little control over prices the way things are now and have been.

Agents who have no interest in the concerns are hawking the iron about, and it is not infrequently the case that agents for the same company are bidding against each other for the trade, and this without the knowledge of the companies themselves. The furnaces try to avoid this by having agents in different trade centers, and allow them only to operate in certain territories; but, by connivance and one scheme and another, the agents get around this, and the furnaces are made to bear the burden. It costs now 35 to 50 cents per ton to sell iron through agents, the latter taking no risks; and the result is many sales are made to parties not deserving credit. The furnace companies are unable to prevent it, not being on the ground nor acquainted with the parties. I believe that the storage system would have the effect to wipe out this whole abuse, and where iron is shipped from storage yard we shall have no difficulty about quality or short weights. I can see no trouble resulting from making iron a medium for speculation, and believe if it has the same result upon iron as it has on cotton, oil and other mediums, my impression is it will have a tendency to steady the market, as it will undoubtedly increase stocks and give us better control of the American market than under the present order of things. On the whole, I am heartily in favor of the scheme, and believe furnace proprietors throughout the South are of the same opinion. I see no reason why this arrangement should not be as popular in the North as here with the furnaces that make iron for the trade.

A furnace company in the Birmingham district say:

It seems to us that if the surplus iron now being made were placed in yard instead of being put on the market the immediate effect would be beneficial. If a considerable part of the output of furnaces were absorbed for, say, several years, prices might be high enough to stimulate production beyond the consumptive wants of the country, and if this should happen with a large stock of iron in yards the effects might be disastrous. In other words, we believe that the immediate effect of the warrant system would benefit the producers, and good results might follow for several years. But whether the permanent interests of iron producers would be benefited by having a large stock of iron in yard represented by warrants in the hands of speculators remains to be seen. We are not disposed to regard the movement as a good one.

The manager of a very important concern puts himself on record as follows:

Our company have believed that the movement would be beneficial, and have consented to join in it to such an extent as may seem desirable to us in the future. I do not myself believe it will be beneficial. I form this opinion from the following facts and opinions: In Scotland a warrant is a warrant, and there is an end of it. It calls for the delivery of a fixed quantity of iron of one uniform grade, of any "g. m. b.," or good merchantable brand, at a fixed place. There is therefore nothing for an investor to do but to bear in mind the fluctuation of prices, and to know whether at any given time the price is high or low. This undoubtedly leads to a large investment in Connal's warrants at times of cheap iron. Under the plans of the American company, a buyer of warrants must be prepared to know the different market values of every separate brand, and the relative freight rates to consuming points from each separate storage yard, and the relative values of every separate grade of iron. This practically presupposes sufficient technical information to rule out every outside buyer, and to leave the market in the hands of consumers who already know these matters.



Now, if consumers would buy the iron they use, or a large part of it, in the form of warrants, it would be an advantage to the producers, for they would get their money more quickly, and without risk of loss; they would have sufficient commission to pay the expense of yarding the iron; they would have no disputes as to shortage or quality after the iron had passed into the control of the buyer. For the converse of the same reasons the buyers would not be likely to buy much iron in that form, and probably none at all as long as they could get what they want from the producers. It would, however, at a time like the present be an advantage to a consumer to buy a supply for two or three years, and carry it on these warrants at a low rate of interest. Unless, therefore, the consumers can be induced or impelled to buy the warrants, I think the scheme will only amount to a means for enabling producers to hold their product and borrow on it when prices are low. I do not think this is good for the market, as it will keep weak makers in blast when they ought to go out. We have seen this in Scotland, where furnaces have gone steadily on for years, losing money and storing their iron, and turning the warrants into cash with which to meet maturing bills. The accumulation of stocks in private hands and consequent lessening of make is the most natural corrective of a demoralized market, and I fear the warrant system would tend to avert the prompt application of this medicine when needed.

One of the largest manufacturers of iron in Virginia holds the following views:

The names published as being behind the movement should give it great solidity, commercially and financially, and if the scheme could be carried out just as outlined, and all the makers of pig iron would agree to go into it, it would undoubtedly be for the benefit of all. The plan is imperfect in that it does not indicate what method is to be taken with those who do not choose to go in, while the reference to the beautiful results of the operations of the Standard Oil Company seems ominous. It is at least unfortunate. Those who recollect the "freezing out" of the oil operators who refused to come under the Standard yoke in the early days of that enterprise (?) cannot look forward with any relish to a possibility of the application of the same methods to their own undertakings.

At the time that coal oil fluctuated so wildly in value the variation in the price of pig iron was nearly as great, when the nature of the two commodities is considered. The probabilities of seeing iron go to \$70 per ton seem no greater now than they do of seeing petroleum go to \$7 per barrel. The geographical relation of furnaces to each other—the situation of each in relation to its supply of materials—differences in product and different systems of grading—all seem to suggest difficulties that must occur to every one. These, however, could probably be, in a great degree, overcome by so powerful a combination as the one sought to be established. In this power lies the danger, and I hope every iron maker who values independence and the right to carry on business in his own way will put every possible obstacle in the way of this odious scheme.

Another Southern maker writes:

We make only charcoal iron, which will for some time find its own market. Generally speaking, I should think the scheme advantageous to the large new plants favorably situated to manufacture at the lowest figures, and who have immense quantities of product to take care of. The law of supply and demand will in any event ultimately give them the market, to the exclusion of the less favorably situated, but I think the proposed system would

hasten this result by stimulating production without reference to consumption. I would expect lower and constantly declining prices so long as accumulation continued, until a very nice balance between production and consumption was reached, and the accumulated stock in store should remain nearly constant, or such an aggregate figure as to prevent consumers' feeling uncomfortable as to supply.

A prominent Southern ironmaster writes as follows:

I do not regard the system of pig iron warrants with favor. Anything that tends to make speculators of producers must necessarily work great injury to the trade in general, and eventually ruin the manufacturer who undertakes to store his product and borrow money on it. If the furnaces store their product, of course the stock of iron increases, and so long as this is the case prices will decrease, and beyond doubt end in a panic that would ruin every furnace that had borrowed money on its product. If manufacturers desire to become speculators they had best close up their shops and carry on the business through the most approved channels.

#### Anthracite Pig Producers.

From furnacemen in Eastern Pennsylvania, New Jersey and New York we are in the position to present the following expressions of opinion. One of the makers on the Hudson River writes:

From the names connected with the project I should judge one object in view was to float heavy investments in blast furnaces in a section of the country where the building of them has been excessive for a few years past. It has now gone so far that the question has to be met. Where a market for all this production of iron is to be found at remunerative prices, and where is the money to come from to keep these furnaces in operation? I am unable to say what effect the use of such warrants will have on our pig iron business, but it seems to me that this country is too large to carry out such a scheme. Pig iron will not stand much expense to the maker for transportation, salaries, commissions and interest. In my judgment the better way is to put out part of the furnaces and make iron only to supply the demand.

B. G. Clarke, president of the Thomas Iron Company, writes:

My most serious objection, as an iron maker, is that it will enable parties to continue the making of iron and piling it in excess of the requirements of the country when the demand is not equal to the supply. The price, necessarily, is much affected, and if it were possible for the warrant company to control the output of iron for an indefinite period, and therefore put up prices of iron, it would induce parties to build new works and increase the supply beyond the requirements of the country. Dealing in warrants, as a rule, is simply gambling, like selling puts and calls. The warrants sold in Scotland are not for the delivery of the iron for use, but for speculation. A Scotch warrant is 500 tons, two-thirds No. 1 and one-third No. 3. Users of our iron would not buy on these terms. Rolling mills and pipe makers use No. 2 and No. 3. Foundrymen use No. 1 and No. 2 only; consequently a warrant would not suit either of the above parties.

The active member of a very large Northern concern deeply interested in the anthracite pig iron manufacture writes:

In reply to your inquiry as to effect on our business of a speculation by the public in the proposed pig iron warrants, I would say that I think it would more likely prove an injury than a benefit to us. As matters are now prices are regulated by the laws

of supply and demand practically, while if warrants are to be dealt in largely and the product of our furnaces sold many times over fictitious values might prevail. As in railroad stocks, oil certificates and cereals cliques might be formed by outsiders who would raise or lower our prices as their temporary profits might seem likely to accrue. With a large surplus stock of iron on hand the market could easily be "beared" and higher prices would be difficult to obtain with so much iron always for sale and ready in stock to be delivered. Even now, because we are thought to be accumulating a little iron, prices drop, and it strikes us they would always be maintained with a well known large surplus in stock. As against the theory that a surplus would prevent sudden advances and reactions in boom times, it would seem likely that it might prove just the contrary, for with a promising market speculators would buy up the surplus and "corner" it for the rise, and, as in the case of some railroad stock "squeeze," prices would go way above the limits that would follow a sudden demand simply from consumers. Customers might even have to face a corner both in the English and our warrants, for capital only would be required to accomplish the result, so completely would the warrants represent the surplus on both sides. But I do not apprehend any great sudden rises in the future, such as we had in 1879, if trade is left to itself, for the number of idle furnaces ready to blow in on short notice is much larger than ever before and supplies of fuel and ores are greater, and capacities to meet any sudden demand for them far in excess of the period when we had our great boom of 1879.

From the Schuylkill Valley comes the following:

I believe that the issue of pig iron warrants will have the effect to prevent ruinous prices and help the weak manufacturers of pig iron, and, so far, affect my interest favorably. On the other hand, it will enable weak parties to continue in blast, and keep up the overproduction that now exists, and, to some extent, counteract the advantages. Overproduction is the main cause of our trouble. The plan of issuing warrants will, no doubt, bring much outside capital to help to carry the surplus iron, and in that way steady the price. I do not propose to use their storage yards, but yet hope that the system might produce favorable results in steadying prices.

From the same district comes the following letter:

One of the representatives of the American Pig Iron Storage Warrant Company spent several hours with us last week trying to induce us to favor their plan, but we refused for the present to allow them to use our name. They propose to loan money on the very best kind of security, and you are bound to them for 20 years. As one of our directors remarked, "It is very nice for the cats, but bad for the mice." We have borrowed money on pig iron, and may have to do it again, but we shall expect to do it on better terms than offered by the warrant company. It may be a good thing for some of the Southern furnace companies, but most of the older concerns in the North, I think, can get along without their help. If I could see how their system would steady or stiffen prices it would receive my favorable consideration. I shall be glad to see any movement that will check the Thomas or any other company in what seems to be needless reductions in prices.

An old established firm of iron makers in Eastern Pennsylvania take the following ground:

We are opposed to all combinations of capital or labor, and to all kinds of trusts

whether sugar, oil or pig iron. We believe in legitimate trade governed by demand and supply. One of the greatest curses of the manufacture of pig iron is want of capital, and we believe the "iron storage warrant company" will only aggravate this by carrying those along who cannot sell or take care of their output. Nobody has any business to go into pig iron making without the capital and facilities to produce same cheaply. For over 45 years we have never blown out a furnace on account of bad markets, but steadily piled the pig iron until wanted, and we never lost any money by the operation.

#### The Mahoning Valley Makers

make the following points, the first saying:

Our impression is that the iron storage warrant company will be used mostly by Southern companies, and instead of putting their iron on the market below cost to raise money, they will use storage warrants, and in that way the price of pig iron will be equalized and keep about the same. We are in favor of low-priced pig iron and low-priced raw material. We notice that when prices are low there are many more uses for iron, which makes the consumption large. The warehouse company will have a tendency to keep prices low—that is, if they are patronized very much by pig iron men. We do not think the Northern furnaces will do it very much, as they have had facilities of this kind during the last few years in the different warehouse companies established in the North. As we understand the Southern furnace companies are mostly bonded, and that interest must be paid, they will in dull times use the warehouse company to raise money to pay their interest as it comes due. Our opinion is that the warehouse company will have a tendency to keep prices low, and as we have no foreign outlet, on account of high-priced labor, as England has, there will be much trouble if stocks accumulate.

Another leading maker in that section writes:

I do not believe the establishment of such a storage warrant company would be for the best interests of the pig iron manufacturers of this section. Viewed from the standpoint of a banker or money-lender, it is easy to see why so many strong and influential stockholders have given their names to the enterprise. All the advantages of the scheme are in their favor, and if they can find people enough to put up iron and borrow money they will be successful, as under their prospectus they simply take iron into their keeping and issue a warrant, for which the producer is obliged to pay. The furnace companies in our vicinity have no trouble whatever in borrowing what money is necessary to carry accumulated stocks without going to the expense of paying an arbitrary storage and carrying charge, outside of the interest, for the privilege of so doing. We can easily see how it would be a temporary advantage for furnace companies whose financial condition is weak, as it would enable them to keep their plants in operation and pile up iron, with a hope that a rise in the market eventually would let them out. The argument used by the promoters of the scheme, that an accumulation of stocks to the amount of 1,000,000 or 2,000,000 of tons would be a safeguard against great fluctuations in the market, is very deceiving in its import. Every legitimate manufacturer knows that when the stocks of iron in the country increase, it is always the occasion of low prices, and a great argument used by the buyer to keep prices down. We had a most forcible example of this in the large amount of Marshall iron that some years ago was put in the storage company's hands in the city of Pittsburgh. Storage certificates were

issued on this iron on which the banks loaned money. It had a depressing effect on the market, for whenever a quotation was made on iron some one who had loaned money on the certificates, and was tired of carrying it, would sell it at a sacrifice. The banks were the only ones who were benefited by the movement, and to the manufacturer it was "a thorn in the flesh" until it was all sold. We do not see how it is possible for any well organized and sound financial concern, who expect at all times to pay 100 cents on the dollar, and give to their stock-holders a reasonable interest on their investment, to pay a storage charge and encourage a scheme that will ever be a wet blanket upon the trade. The large productive pig iron capacity of this country as it now stands will prevent any great fluctuations in the price of this commodity, and we believe the best way to bring about an improvement in the iron market is to curtail production rather than to adopt any measure whereby inducements are offered to produce something that is not wanted. In conversation with many of the prominent iron manufacturers of the Mahoning Valley, it is the general sentiment that the success of the warrant company would seriously impair business here.

Still another large producer in the Mahoning Valley puts it as follows:

We think that the creation of pig iron warrants would be a good thing for the South, and consequently a good thing for the entire country. Southern iron is, as you know, almost uniform in quality, and the term "Southern iron" is almost generic; therefore it would be much easier handled. Our Southern friends have large interest accounts, nearly all of them have their property bonded, and are obliged, in order to realize, to pay fixed charges, whether the earnings warrant it or not. I know of a recent large sale made at a low price, and the agent expressly stated that the money was needed to pay the coming interest. It would be impossible in the North to get up any general scheme of this kind, as there are so many varieties of iron made, and the Northern furnaces, as a rule, are in a very good financial condition, and do not need to hypothecate their product in order to raise money.

A producer in the Hanging Rock region says: "We think pig iron stored and held for warrants would have about the same effect on the market as surplus stock held in any other way. We are not well enough posted in regard to the plans of the company lately organized to speak more definitely. We are disposed to regard the movement unfavorably."

One particularly interesting point is the possible effect which the plan of introducing an American warrant system—it successful—might have upon the business of

#### Iron Commission Merchants.

Some of the leading firms at the principal distributing points have written to *The Iron Age* on the subject, the first four letters being from

#### NEW YORK MERCHANTS.

A firm dealing largely in iron writes:

To buy and sell pig iron warrants on brokerage is one thing, and to sell pig iron on commission, as furnace agents, is another; and they are very wide apart, although both lines of business may be readily done by one house. While at first glance we were unfavorably impressed with the idea as published in *The Iron Age*, our later information leads us to believe that the establishment of the American Pig Iron Storage Warrant Company will be a decided benefit to the producers, in that it will enable them to hold their iron

for a fair price; and to the consumer, in that its tendency will be to relieve the market of violent fluctuations and thereby enable them to hold to a more uniform and satisfactory price for their finished work. The commission merchants will meantime, doubtless, continue to sell to consumers largely on the old basis to which the listing of warrants will be no bar. We understand that the warrant company is an established fact, and believe that the commission merchants who first realize it, and take advantage of the new system, will get the most benefit out of it.

A prominent member of the trade writes:

I cannot see that the interests of the business of the commission houses will suffer by the introduction of warrants, as they will probably be of 100 tons each, and many furnaces will require their aid to dispose of the warrants, and want loans on them.

Stroud & Co., of New York, write:

The effect upon the business interests of commission merchants of a successful introduction of pig iron warrants as a speculative medium would so largely depend upon circumstances that it is hard to say at this time what the result would be. The effect upon the business of the pig iron furnaces is more apparent, and in our opinion it would prove detrimental. One of the arguments used in favor of the scheme is our chief argument against it—the accumulation of a large stock, which, in our judgment, would be a constant menace to the market. It would be held largely by speculators, who would regulate the price of iron according to their own sweet wills instead of in the interest of the iron manufacturers. The only furnaces which would profit by it would be those whose owners cannot well afford to "blow out," and these are the very men who in times of depression would go on adding to the already large stock on hand, instead of being compelled, by the operation of the natural laws of trade, to stop work or reduce their output.

An increase in the stock of pig iron would always be a signal for a raid upon the market by the speculative "bears," and should favorable conditions appear on the commercial horizon it would be the speculative "bulls" who would reap the benefit in nearly every instance, and not the furnaces. In short, while such a scheme would certainly enable the furnaces to obtain financial aid at times when they need it, we claim that that advantage is more than offset by the undoubted facts that it would be the means of increasing the production, thereby increasing competition, which with the constant menace to the market of a large stock on hand would enable the operators in warrants to cut down the profits of the furnaces. It must be borne in mind that when a furnace sells its iron to a speculator it thereby creates a competitor in the market for the sale of its own iron.

One of the oldest firms in the business writes:

We observe in *The Iron Age* the programme of the specious Pig Iron Warrant Association or company, apparently supported by many ornamental names, sprinkled here and there with a good many others with their own axes to grind. A very hazy, sentimental feeling seems to pervade the play-bill laid out for the public, and that some Dosterswind process is all that is needed to better the condition of prices and prospects of Southern pig iron. According to Swank, there were only 350,000 tons of pig iron in stock in the United States, of which 112,000 tons were charcoal. The Southern furnaces could not expect an advance of over \$8 a ton at their own works when



they state confidently they can make it for \$9 and \$10 a ton. The great obstacle to the success of the scheme is that all pig iron is not of the same value; that the quality varies greatly, and the location of the iron will make a great difference in the market value of the iron. A furnace turns out Nos. 1, 2 and 3. The No. 1 is used for foundry purposes, Nos. 2 and 3 by mills to make bar iron. The iron founder does not buy the lower grades, and No. 1 is too expensive for the mill men. Iron, besides, has a different value at Birmingham, Louisville, St. Louis, Chicago, Pittsburgh, Philadelphia, and New York and Boston. The whole make-up of the scheme is like a body of brass and legs of clay; it will not stand close criticism, and the prospectus is like some pretty calicoes—nice to look at, but will not stand scouring. In our opinion, the company will not succeed until there are large stocks needing their assistance to finance. At present no change will take place by their operations. We would further add that the value of a warrant issued for iron of the kind we describe and at the places we name would not have a uniform value, and hence, we think, would not likely get on the Stock Exchange. Even the Iron and Metal Exchange in New York has been a complete failure, greatly from the causes above described, and no sales are now effected there.

#### PHILADELPHIA FIRMS

Contribute the following opinions:

We are inclined to the opinion that so far as the present relations exist between the consumers and commission men there will be no change. The question will at once arise whether it will be more advantageous for a consumer to purchase his requirements from a regularly constituted furnace agent or from a speculator. Were all brands of pig iron equally adapted for all purposes, the conditions might be somewhat changed. There might be an additional field opened in the sale of warrants on a brokerage. We do not apprehend that makers of standard brands will have any necessity to take advantage of the warrants, as those brands are always in demand in excess of the supply.

A leading concern writes:

So far as this firm is concerned, we do not think that the business of the American Pig Iron Storage Warrant Company will affect us in the least, as the furnace companies we represent will not take their business out of our hands. Several of the furnaces that we represent have been doing business for a long time on precisely this basis, and have the yard wherein the iron is stored leased to this firm, and from time to time, as their wants require it, we raise money on these storage-yard warrants. We think in a general way that the successful operation of this company will have a very beneficial effect upon the pig-iron business, as we hope that it will steady prices. As far as the speculative part of it is concerned, we hope not to see too much of it done, as we think it is a bad thing to have as solid an article as pig iron be a medium for speculation.

We shall in next week's issue of *The Iron Age* publish additional letters from producers, commission merchants, and from leading consumers.

The success of the open-hearth cast steel gun built by the Standard Steel Casting Company, of Thurlow, Pa., and tested last week by Government officials at Annapolis, Md., has revived some interest in the ill-fated Bessemer gun, made by the Pittsburgh Steel Casting Company, of Pittsburgh, which burst during the test-

ing at Annapolis some two months ago. In an interview on the subject of built up and cast guns, Mr. W. Hainsworth, superintendent of the Pittsburgh Steel Casting Company, expressed his views as follows: "I am glad that the Thurlow gun stood the test, and think that it will come out of the star-gauging test all right. When I undertook to turn out a Bessemer gun I understood that great elastic limit was necessary. The failure of the gun was due to the hardening of the breech, which caused internal grain. We tempered ours to give it greater elastic limit. The Thurlow gun was annealed, but not tempered, and they were wise to leave it in its natural state. Its success establishes the fact that a Bessemer gun can be made and stand a good test when properly annealed, but not tempered. We will not cast another gun now, but if the Government should issue proposals for steel cast guns we would be on hand."

## OBITUARY.

CORNELIUS H. DELAMATER.

On Wednesday of last week the founder of the Delamater Iron Works died of pneumonia, at his residence in this city. Mr. Delamater was born at Rhinebeck Heights, N. Y., August 30, 1821. When he was three years old his parents moved to New York, where, at the age of 14, he entered the hardware house of Swords & Co. Two years later he entered the Phoenix Iron Works, where his father was cashier and confidential adviser. When 20 years old he formed a copartnership with Peter Hogg, under the firm name of Hogg & Delamater. This firm continued until 1857, when, Mr. Hogg retiring, the Delamater Iron Works were started on the site now occupied at the foot of Thirteenth street, this city. The unusual mechanical ability developed by Mr. Delamater made him an all-important factor in the establishment, which afterward increased with such wonderful rapidity. During the Rebellion he performed a very essential part, as it was through his large wealth and the great resources of his works that the Monitor and Dictator were built in so short a time. He also built the Iron Witch, the first iron steamboat that ever ran upon the Hudson. He contracted to build 30 Spanish gunboats in eight months, at a cost of \$60,000 each in gold, and although the insurgents interposed many serious obstacles by litigation in the courts, the boats were delivered in seven months from the date of the contract. The machinery for all the boats was built at his own works, in addition to all the regular work that was done. The hot-air engine of John Ericsson, as a substitute for steam, was first introduced in the Ericsson, which was built entirely by Mr. Delamater, by whom the incidental experiments were also conducted.

A list of the great undertakings in which Mr. Delamater was interested, and to the development of which he lent his thorough mechanical knowledge, would be simply an enumeration of the initiative work which the Delamater Iron Works have taken in aiding the advancement of practical mechanics during the past quarter of a century. Having quick perceptive faculties, and being familiar with the requirements, Mr. Delamater was enabled to instantly perceive the merits of an invention, and to closely estimate its financial, as well as mechanical, prospects, and having once enlisted his energies, he knew no discouragement. This characteristic made the works the harbor for those seeking the aid to be obtained from the all-powerful combination of brains and capital. Personally Mr. Delamater was exceptionally popular with his men, as

was shown during the draft riots, when the mob refused to burn his works. As one of the Commissioners of Rapid Transit in this city, in 1876 and 1877, he foresaw what the city needed, and to-day the public are reaping the comforts and pleasures of an elevated railroad system of great value. By the articles of copartnership it is agreed that the works shall be continued by the survivor six months after the decease of his associate, and under this stipulation the entire establishment will be conducted by William Delamater, as the survivor of the firm.

## Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., February 12, 1889

In order to simplify methods of steel inspection under Government auspices to lessen cost and relieve officers at the establishments filling steel contracts the Secretary of the Navy issued the following instructions:

NAVY DEPARTMENT, WASHINGTON, {  
February 8, 1889.

Gentlemen: The present method of conducting inspection requires a large force of officers, likely to be much increased as the work increases, and assumes that the Department is to witness and approve of the process of manufacture in the various steel works where the shipbuilders shall place contracts.

The experience already had by the manufacturers should make it possible for them to know, through their own experts, the characteristics of their daily product, and the Department deems that the time has come when it is wise to withdraw largely their men from the works, and leave the responsibility upon the manufacturers, and transfer its testing to the shipyards, and there test the finished material as it is received, and accept or reject as the results may justify.

This matter requires consideration, and a consultation will be had at this Department at 1 p. m. on Tuesday, February 12, 1889, for the purpose of considering and discussing the subject as to the more satisfactory and economical place or places—the manufacturers' works, shipbuilding yards, or both—to conduct the several required inspections of steel materials to be used in the construction of United States vessels, and you are asked to send a representative from your works to confer with the Chief Constructor, the Engineer in Chief, the president of Steel Inspection Board and representatives from shipbuilding yards and steel-makers.

Very respectfully,  
W. C. WHITNEY, Secretary of the Navy.

In pursuance of this circular letter, at 1 o'clock to-day the following officers and others assembled at the office of the Steel Inspection Board:

Chief Constructor U. S. Navy, T. D. Wilson (in the chair); Engineer-in-Chief U. S. Navy, George W. Mellville; Capt. H. L. Howison, U. S. Navy, president of Steel Inspection Board; R. W. Davenport, Lieut. W. H. Jaques, representing Bethlehem Iron Company; Axel Petrie, representing Midvale Steel Company; William Taylor, of the Spang Steel Works, Pittsburgh; N. F. Palmer, Quintard Works, New York; Chas. Cramp, of the William Cramp & Sons S. & E. B. Company; Mr. Wetherell, Standard Steel Casting Company; Cephus Taylor, Linden Steel Company; Mr. Rowland, Continental Iron Works.

The conference lasted several hours. The gentlemen of the board heard the suggestions offered. They will hold a meeting in a few days to go over the mass of matter and formulate their recommendation in a report to the Secretary of the Navy.

Within the lines laid down in his circular letter the disposition of the officers is to make important changes in this branch. The manufacturers are well satisfied to have matters remain as they are. It is possible that a compromise plan will be recommended which will continue certain work at the works and other portions at the yards.

# TRADE REPORT.

## Chicago.

Office of *The Iron Age*, 95 and 97 Washington street, CHICAGO, February 11, 1889.

**Pig Iron.**—While the market can hardly be called active, it seems to be gradually approaching that condition. The number of buyers is increasing, and although the demand is mainly for small lots the aggregate forms quite a respectable volume of business. Occasionally a consumer is found with sufficient confidence in the future to provide for his wants for a few months. Several transactions of that character have occurred during the week, ranging from 500 to 1000 tons each. For some of these large orders there was a vigorous competition among local manufacturers, and \$16 for No. 1 Foundry was shaded. The Calumet, Bay View and Mayville furnaces are again in almost complete control of this market in supplying Pig Iron for general purposes, and the Calumet is also making a high-grade Soft Iron branded "Chicago Scotch" which is displacing Ohio Soft Irons. Prices are as weak and unsettled as they have been, with no indication of an early improvement in this respect. Notwithstanding the low prices now prevailing, manufacturers are keeping their furnaces in blast with remarkable tenacity, each probably hoping that some of his competitors may be tired out first. The furnaces thus far blown out in this immediate vicinity have been making Bessemer Iron, and not Iron for the general trade. The Ohio failure which occurred on Saturday was unexpected, as the company was believed to be financially strong. Perhaps the restriction of production so necessary to the recovery of the health of the Iron trade will after all only be brought about in this unpleasant way, by the weeding out of weak concerns. The opinion is freely expressed that the present depression in Pig Iron is another of the inevitable movements toward the permanent establishment of a lower level of prices in this country, and that when an improvement comes our enormous furnace capacity will prevent a return to the best prices of the last period of activity. Prices of Lake Superior Charcoal are apparently as firm as they have been, moderate sales being reported during the week. Cash quotations are as follows, f.o.b. Chicago: Lake Superior Charcoal, Nos. 1, 2 and 3, \$20; Lake Superior Coke, No. 1, \$16 @ \$17; No. 2, \$15 @ \$16; No. 3, \$14 @ \$15; American Scotch (Blackband), No. 1, \$18.50 @ \$19.50; Jackson County Silvery, No. 1, \$18; other Ohio Soft Irons, No. 1, \$17 @ \$18; Chicago Scotch, No. 1, \$17.50; Southern Coke, No. 1 Foundry, \$16 @ \$16.50; No. 2 Foundry and No. 1 Soft, \$15.25 @ \$15.75; No. 3 Foundry, \$15; Gray Forge and No. 2 Soft, \$14 @ \$14.50.

**Bar Iron.**—The condition of this branch of trade is about the same as was reported last week. Orders are scarce and prices are nominal at 1.70¢, half-extras, f.o.b. Chicago, for carload lots of good quality Common Iron. Good specifications have been placed at 1.65¢, but thus far this is believed to have been the bottom price made by standard mills. Small lots are selling from store all the way from 1.85¢ to 2.10¢, according to quantity and quality.

**Structural Iron.**—A few advance orders have been placed for Beams for building purposes, but in other respects very little is doing. Mill lots are quoted as follows, f.o.b. Chicago: Angles and Sheared Plates, 2.12¢ @ 2.15¢; Universal Plates, 2.20¢; Tees, 2.45¢ @ 2.55¢; Beams and Channels, 2.90¢; Store lots are sold

at 2.35¢ for Angles; 2.70¢ for Tees, and 3¢ @ 3.4¢ for Beams and Channels.

**Plates, Tubes, &c.**—Although large contracts for Plates were less numerous than in the previous week, the general condition of trade was somewhat improved. The boiler-makers are receiving good orders and are free buyers of Plates. Prices are unchanged, small lots from store being quoted at the following rates: Sheet Iron, Nos. 10 to 14, 2.50¢; Sheet Steel, 3¢ @ 3.50¢; Tank Iron, 2.40¢; Tank Steel, 2.60¢ @ 2.75¢; Shell Iron, 3¢; Shell Steel, 3.12¢; Flange Iron, 4¢; Flange Steel, 3.50¢; Fire-Box Steel, 4.75¢ @ 5.75¢; Boiler Rivets, 4¢ @ 4.25¢; Ulster Iron, 3.75¢; Boiler Tubes, 62½¢ @ 65¢ off.

**Sheet Iron.**—The demand for Galvanized is spasmodic, but even yet stocks in warehouses here are not up to the usual standard. Quotations for small lots are unchanged, at 65¢ off for Juniata and 65¢ and 2½¢ off for Charcoal. Black Sheets are quiet and unchanged, at 3.30¢ for No. 27 Common from store, and 2.95¢ @ 3¢, f.o.b. Chicago, for mill lots.

**Merchant Steel.**—An order for a good quantity of Open-Hearth Spring Steel was placed at quite a low price, and Tire Steel has also been purchased at very low rates. Trade has been mostly confined to small lots, however, for which full prices are obtained. We quote as follows: Soft Steel Bars, 2.10 @ 2.30¢; Tool Steel, 7.75¢ @ 8¢; Specials, 13¢ @ 25¢; Crucible Spring, 3.75¢; Open-Hearth Spring, 2.20¢ @ 2.50¢; Open-Hearth Machinery, 2.30¢ @ 2.50¢; Tire, 2.20¢ @ 2.50¢; Sheet, 7¢ @ 10¢.

**Steel Rails.**—The sales of the week amounted to about 10,000 tons. Other orders are in sight which will soon be placed. Prices are maintained at \$30 @ \$30.50, according to quantity. The Western manufacturers are deeply interested in the competition now being waged between the Eastern and Pittsburgh manufacturers over Southern business. It is to be hoped that this section, having had its taste of demoralization, will not become involved in the trouble. The Joliet Steel Works have shut down for a few weeks for repairs, which leaves the North Chicago Rolling Mill Company the only active concern here at present.

**Old Rails and Wheels.**—Sales of Old Iron Rails have been made at points in the interior of the State at \$20.50 @ \$21, and holders insist that they are worth the same price here. On the basis of transactions for deliveries elsewhere, however, it is difficult to figure above \$19.75. Old Steel Rails have been sold in small quantities at \$15 for lengths under 3 feet and \$18.50 for long lengths. Old Car Wheels are dull and are quoted nominally at \$19.

**Scrap.**—The supply is very abundant, the demand is very limited and most dealers are not attempting to push sales. Quotations to consumers are about as follows, per ton of 2000 lb: No. 1 Railroad Shop, \$20; Track, \$18; No. 1 Mill, \$13 @ \$14; Pipes and Tubes, \$18; No. 2 Mill, \$9; Axles, \$25.50; Horseshoes, \$18; Machinery Cast, \$13 @ \$14; Stove Plate, \$9; Cast Borings, \$8; Wrought Turnings, \$10.50 @ \$11; Coil and Leaf Steel, \$14.50; Mixed Steel, \$10. Dealers are giving \$14 for Mixed Country Scrap.

**General Hardware.**—The volume of business in Shelf Hardware is not so great as it was in January, some houses reporting a decided falling off in orders. Other establishments, however, continue to be very busy for the season, and consider their prospects bright for a good month's trade. Several large buyers from remote western points have been in the city the past week, and have placed good orders for Hardware, including considerable

quantities of Cutlery. The houses which have been making special efforts of late to build up their Cutlery trade are meeting with very encouraging success, and are intercepting business which until quite recently went East or abroad. Heavy Hardware is in good demand, but only in certain localities, some districts tributary to this market buying very little at present. The houses engaged in this line are carrying over to next season large stocks of Sleighs and materials for Sleighs, for which there has been no sale this winter owing to the lack of snow. Manufacturers' agents are now booking large orders for seasonable goods for future delivery. Copper Rivets and Burs have been advanced to 50¢ off.

**Nails.**—Manufacturers' agents are receiving numerous inquiries for Steel Nails, and are expecting a good demand shortly, as stocks in second hands are rapidly being reduced. Some orders of considerable size have been placed quietly within the past two weeks by parties who had been supposed to be well supplied, thus strengthening the position of the manufacturers very materially. Jobbers' prices are still the same as those quoted by manufacturers, carload lots being sold at \$2, and small lots at \$2.05. Wire Nails have not improved. Carload lots are selling at \$2.40, and small lots at \$2.45.

**Barb Wire.**—The demand is good but prices show no change, jobbers quoting 2.80¢ for Painted, and 3.40¢ for Galvanized in mixed carload lots, and 2.90¢ and 3.50¢, respectively, for small lots, with slightly lower rates to best buyers.

**Pig Lead.**—Prices are a shade lower, some 900 tons having been sold at 3.50¢. Higher values are looked for within 60 to 90 days, with the approach of spring trade and the increased consumption which will take place.

## Philadelphia.

Office of *The Iron Age*, 220 South Fourth St. PHILADELPHIA, Pa., February 12, 1889.

**Pig Iron.**—There is very little change to note as compared with the market a week ago. Prices are steady, with some degree of firmness, and while no one looks for much improvement, there is a somewhat general impression that bottom figures have been reached, for awhile at all events. The offerings are liberal at quoted rates, but it is doubtful if concessions could be obtained unless quality was more or less doubtful, or for other reasons not applicable in ordinary transactions. The demand is not of a very satisfactory character, however, consumers taking only such lots as are required within the next three or four weeks. This, of course, is a pretty safe guarantee of the demand being continuous, unless consumption falls off unexpectedly. This is a point upon which there is nothing definite to base predictions, although the trade hope, and profess to believe, it will come out all right in course of a few weeks. There is certainly no reason for a contrary opinion so far as now appears. Nevertheless it is useless to deny that want of confidence is probably the most prominent feature in the market. As an offset to this it may be said that values would easily respond to any favorable influences. Consumers could not buy more sparingly than they have done of late if they are going to run at all, and with the first sign of improvement carload orders would be increased to 50-ton lots, and so on all the way through. Everything depends, therefore, on the amount of business forthcoming within the next 30 or 60 days. As to the probable requirements of consumers, as we said before, there is no basis upon which to form decided opinions. A good deal of disappointment has been met with so far during



1889, and there may be still more before the market takes a right kind of a turn, but the trade are still hopeful that things will turn out favorably. Meanwhile prices have become steady at about \$15.25, delivered, for Gray Forge, \$17 for No. 2 Foundry and \$18 for No. 1. Special brands command from 50¢ to \$1 per ton beyond these prices, and are pretty well taken up at very near to outside figures. Southern Iron is not pressed for sale, although holders would probably shade a trifle on firm offers for good-sized lots. Asking prices are \$17, ex ship, for No. 1, \$16 for No. 2 and \$15 for Gray Forge, with no recent transactions reported.

**Foreign Iron.**—Bessemer quoted at \$19.50 @ \$20, c.i.f., duty paid, with no demand. Spiegeleisen is quoted \$28.50 for 20 %, with bids for round lots at \$28, same terms.

**Blooms.**—A fair business is doing at somewhat irregular prices, although quotations are ordinarily about \$28 @ \$28.50 at mill for Nail Slabs; \$29 @ \$30 for Sheet Iron Billets; \$30 @ \$31 for Soft Tank, and \$35 @ \$36 for flange purposes; Charcoal Blooms, \$52 @ \$54; Run-out Anthracite, \$42 @ \$44; Scrap Blooms, \$32.50 @ \$34 per "bloom" ton of 2464 lb.

**Muck Bars.**—Business during the week has been done at \$27, delivered, but holders are inclined to stiffen up to \$27.50, with bids of \$27 declined within the past two or three days.

**Bar Iron.**—Nothing satisfactory can be said under this heading. The demand is said to be a trifle better in the interior, but prices show no improvement and can hardly be quoted with any degree of exactness. Of course there are all kinds of Iron, and there are all kinds of prices; the difficulty is to adjust the one to the other. Strictly first-class Bars are supposed to be worth 1.8¢ @ 1.85¢; some claim to offer them at a tenth less, while still others claim to offer a good Iron at 1.65¢ @ 1.70¢. Exact quotations, therefore, are simply impossible in times like these, although those whose product is beyond question are holding for 1.8¢ and upward, but a good deal depends on the kind of order that is placed before them. Skelp Iron is quiet, with sellers at 1.75¢ @ 1.80¢, but the demand appears to have been satisfied, as only small lots are being asked for at present.

**Plate and Tank Iron.**—A very dull market is reported in this department, and while there is undoubtedly a great deal of business to come on the market in the near future, the immediate position is most unsatisfactory. Prices are irregular, although they can hardly be called lower, as orders are not large enough to make concessions worth while. New business is anxiously looked for, however, and to secure something very desirable prices might possibly be shaded from asking rates, which are as follows: 1.90¢ @ 2¢ for Ordinary Plates and Tank Plates, 2.1¢ @ 2.2¢ for Universal Plates; Shell, 2.4¢ @ 2.5¢; Flange, 3.5¢; Fire-Box, 4¢; Steel Plates, Tank and Ship Plate, 2.15¢ @ 2.25¢; Shell, 2.7¢; Flange, 3¢ @ 3.1¢; Fire-Box, 3.1¢ @ 4.1¢.

**Structural Iron.**—Although there is no improvement to note in this department, the feeling is hopeful because of the large amount of business which is certain to come on the market in course of a short time. It may come within a couple of weeks, or it may be postponed until next month, but that it will come soon is certain, hence there is less despondency than might be expected after such a protracted period of depression. Prices remain as before, viz: Bridge Plate, 2¢ @ 2.1¢; Angles, 2¢ @ 2.1¢; Tees, 2.4¢ @ 2.6¢; Beams and Channels, 2.8¢ for Iron or Steel.

**Sheet Iron.**—There is a fair demand for small lots, and prices remain as last quoted—viz.:

Best Refined, Nos. 26, 27 and 28....	3 @ 3 1/4
Best Refined, Nos. 18 to 25....	2 1/2 @ 3
Common, 1/2 less than the above.	
Best Bloom Sheets, Nos. 26 to 28....	4 1/4 @ 4 1/4
Best Bloom Sheets, Nos. 22 to 25....	3 1/4 @ 4
Best Bloom Sheets, Nos. 16 to 21....	3 1/4 @ 3 1/4
Blue Annealed.....	2 1/2 @ 2 1/2
Best Bloom, Galvanized, discount.....	62 1/2
Common, discount.....	67 1/2

**Steel Rails.**—The weakness reported at Western mills does not appear to be participated in by those in the East. Prices are, to some extent, nominal, but makers claim that they would let business pass them rather than make concessions, although 5000-ton lots or upward might possibly be accepted at fractionally lower rates if deliveries and payments were especially satisfactory to sellers.

**Old Rails.**—The market is very quiet, and while holders are firm and prices nominally unchanged there is less disposition to pay the high prices asked—say, \$24 and upward for lots in store. Several lots have changed hands at from \$24 to \$24.50, delivered to mills near-by, with further demand at the inside figure.

**Scrap Iron.**—The market is very quiet and prices somewhat easier, unless for very choice lots. Quotations about as follows: \$20 @ \$20.50 for cargo lots; \$21 @ \$21.50 for carload lots, delivered, or for choice \$22; No. 2 do., \$14 @ \$15; Turnings, \$13 @ \$14; Old Steel Rails, \$20 @ \$21; Cast Scrap, \$15 @ \$16; do. Borings, \$9 @ \$10; Old Fish Plates, \$25 @ \$26; Old Car-Wheels, \$17 @ \$18, Philadelphia.

**Wrought-Iron Pipe.**—Business has been fairly active taking everything into consideration, and prices are unchanged. Orders for large lots are still felt to be near at hand, but for the present there is nothing more than the ordinary run of trade. Discounts as follows: Butt-Welded Black, 55 %; Lap-Welded Black, 65 %; Butt-Welded Galvanized, 45 %; Lap-Welded Galvanized, 55 %; Boiler Tubes, 62 1/2 %.

**Nails.**—The feeling is a shade better, and cutting is less frequently met with, but the demand, as may be expected at this season, is quite light. Stocks decreasing, and some progress is being made in the effort to restrict production. Prices remain at from \$1.90 to \$2 for store lots.

## Cincinnati.

Office of The Iron Age, Fourth and Main Sts. CINCINNATI, February 11, 1889.

**Pig Iron.**—An improved tone has prevailed in the local market during the week. The inquiries have been numerous, especially for Forge Iron, and there have been some sales of moment, but sellers have assumed a firmer attitude, and, demanding higher prices, have checked the increasing requests of consumers. Foundry Iron, too, has been held more firmly, but it has been less in demand from either speculators or consumers. For prompt delivery Iron of all kinds is obtainable at the close 50¢ @ \$1 per ton less than is asked for delivery embracing six months to a year. Purchasers for speculative account have been less successful than buyers for consumption, there existing a feeling against the former operators. Sales of Foundry Iron, while considerable in the aggregate, have been largely for small amounts. Sales of Forge Iron have consisted of Grey Forge, Mottled and Soft Irons, largely the product of Ohio furnaces. About 5000 tons of these grades have been sold, one lot of 2000 tons Southern Grey Forge selling at \$12.75, cash, and 500 tons ditto at \$13. No. 1 Southern Foundry has been offered at \$14.75, and same brands are obtainable at this rate at the close for immediate shipment, but most

sellers claim to ask \$15, and even more. The following are the approximate prices current here at the close for cash, f.o.b.:

### Foundry.

Southern Coke, No. 1 (new classification).....	\$14.75 @ \$15.25
Southern Coke, No. 2 (new classification).....	14.25 @ 14.00
Southern Coke, No. 3 (new classification).....	13.75 @ 14.25
Ohio Soft Stone Coal, No. 1.....	15.00 @ 16.00
Ohio Soft Stone Coal, No. 2.....	14.90 @ 15.00
Mahoning and Shenango Valley.....	16.50 @ 17.00
Hanging Rock Charcoal, No. 1.....	21.00 @ 22.00
Hanging Rock Charcoal, No. 2.....	19.00 @ 22.00
Tennessee and Alabama Charcoal, No. 1.....	18.00 @ 18.50
Tennessee and Alabama Charcoal, No. 2.....	17.00 @ 18.00

### Forge.

Strong Neutral Coke.....	13.00 @ 13.50
Mottled Neutral Coke.....	12.00 @ 12.25
Gray Forge.....	12.75 @ 13.25

### Car-Wheel and Malleable Irons.

Southern Car-Wheel.....	20.00 @ 25.00
Hanging Rock, Cold Blast.....	22.00 @ 25.00
Lake Superior Car-Wheel and Malleable.....	21.00 @ 22.00

**Manufactured Iron.**—There has been a fair volume of business and a steady market, the change in prices being only in special instances.

**Nails.**—The demand has been fair and the market has remained steady, but the offerings are liberal. 12d @ 40d sell at \$1.90 @ \$1.95 per keg, with 10¢ rebate in carload lots at the mills. Steel Nails sell at \$1.90 @ \$1.95, and Steel Wire Nails at \$2.60 @ \$2.65 per keg.

**Old Material.**—The market has ruled heavy and lower prices have been accepted, Old Rails having sold as low as \$20, but other and lighter weight are held at \$21; Old Wheels have sold to a moderate extent at \$18, cash.

## Cleveland.

CLEVELAND, February 11, 1889.

**Iron Ore.**—Ore dealers are endeavoring to induce furnacemen owning Ore now on the docks to accept new Ore in its place, the latter to be delivered in May. This would enable them to resell the Ore, disposed of at cheap figures last August and September, at an advance of about 40¢ per ton over the figures then obtained. Beyond the 10,000-ton transaction recorded last week there appears to have been no local sales of new Ore. The price obtained for this Ore—\$4.15 per ton for Non-Bessemer Menominee—seems likely, however, to furnish a basis for the establishment of permanent quotations. Several heavy purchasers have said to-day that the range of prices for all standard Ores will be from 25¢ to 40¢ above last season's opening prices. The 75,000 or 80,000 tons of new Ore already sold at Chicago, according to the information received by interested parties here, was at an average advance of 42¢ per ton over the prices at which the same Ores sold at the beginning of the season of 1888. Vessel rates have been somewhat demoralized by the fact that a line of vessels have been chartered to bring Ore from Ashland to Cleveland for \$1.25 per ton during the season. Rival lines claim that the amount of Ore to be carried by these vessels is small and that the Ore is intended to serve as ballast for other cargoes. These charters have had the effect, however, of upsetting the calculations of the lake carriers and will undoubtedly result in a schedule of rates based upon a charge of not over \$1.05 or \$1.10 at the most, from Escanaba to lower lake ports. Real activity in the Ore market is not looked for until there shall have been some improvement in the Pig-Iron situation, which just at present could not well be more lifeless and depressed. None of the large mining companies have thus far fixed prices, although there is very little question as to what these quotations will be.

**Pig Iron.**—Beyond a limited inquiry for Foundry Iron the market is without life. Such widely varying reports are in circulation regarding concessions by the furnacemen that no authoritative information as to quotations can be given. Small lots of Bessemer Iron are known to have been sold at liberal sacrifices, but sellers generally take a more hopeful view of the outlook. Several local furnaces are expected to go out of blast, temporarily, within the next ten days.

**Manufactured Iron.**—Several mills have stopped running, and only small and widely scattering sales are reported.

**Old Rails.**—Sales of Old American Rails, in small lots, are reported at \$22.50 @ \$22.75.

**Nails.**—Steel Wire Nails at \$2.40 are very firm, as are also Common Steel Nails at \$2.

It is reported at the office of the Chapin Mining Company that about three-fourths of the stock in the Chapin Mine has been sold to Ferdinand Slessinger, of Milwaukee, associated with certain New York capitalists, for \$2,000,000. The sale does not disturb the lease, which has 30 years to run. Nearly all of the stock not purchased by Mr. Slessinger is owned in this city. The Chapin Mine produced last year about 250,000 tons of Ore. The Ore sold at the beginning of last season at \$5, dropped at one time in the autumn to \$4.50 @ \$4.75, and closed at about \$5.25.

## St. Louis.

Office of *The Iron Age*, 212 N. Sixth st.,  
St. Louis, February 11, 1889.

**Pig Iron.**—The general conditions remain unchanged. The views expressed by the representatives of some of the leading furnaces that the recent large purchases would have the effect of strengthening the market seem to have been somewhat premature. While the general opinion prevails among those interested in the Iron trade that the market has about reached bottom and an upward turn may be looked for, yet, for some unknown reason, the expected improvement fails to materialize. A number of furnaces have advanced their prices from 50¢ to \$1 per ton, but their object in so doing was to emphasize the fact of their withdrawal from the market at present prices, and the advanced figures are consequently purely nominal. Inquiries are coming in from large consumers, but reported sales are generally for small lots for prompt delivery, which gives the market more or less of a hand-to-mouth character. Prices for such lots for cash, f.o.b. St. Louis, are as follows:

Southern Coke, No. 1 Foundry,	\$15.25 @ \$15.75
Southern Coke, No. 2 Foundry,	15.00 @ 15.25
Southern Coke, No. 3 Foundry,	14.25 @ 14.75
Gray Forge.....	13.50 @ 13.75
Ohio Softeners.....	17.50 @ 20.00
Lake Superior Charcoal.....	21.00 @ 21.50

### Missouri.

Charcoal Foundry, No. 1.....	16.00 @ 16.50
Charcoal Foundry, No. 2.....	15.00 @ 15.50

### Tennessee.

Charcoal Foundry, No. 1.....	17.50 @ 18.50
Charcoal Foundry, No. 2.....	16.75 @ 17.50

Connsville Coke, f.o.b. East St. Louis, \$4.70; St. Louis, \$4.85.

**Bar Iron.**—The mills continue to be kept pretty well employed on orders received from country merchants, who are stocking up preparatory to the spring trade. Prices are weak and sensitive, and low figures are accepted on desirable specifications. Carload lots from mill are quoted at 1.80¢, and lots from store at from 1.85¢ to 1.95¢, according to quantity and quality.

**Barb Wire.**—There is no perceptible change in this line. Mills are all busy,

and in some cases are running behind on their orders, but prices continue weak and unsettled. There is no basis for ascertaining exact quotations, as each individual mill is making its own. It seems probable, however, that an advance will have to be made shortly, as manufacturers claim there is no inducement in present prices for them to keep their plants in operation, and say it would be more profitable to close down rather than continue selling at the figures now ruling, which remain as last quoted: Carload lots, Two and Four Point Painted, \$2.90; carload lots, Two and Four Point Galvanized, \$3.50, f.o.b. St. Louis; less than carload lots, 5¢ additional.

## Birmingham.

BIRMINGHAM, ALA., February 11, 1889.

Notwithstanding the continued depression in Iron generally, the past week has developed encouraging features for the near future in the financial situation. Bankers are more cheerful than they have been for 12 months. A great deal of cash has come into circulation here by means of the sale of several lots of stocks in gold mining companies in East Alabama. So much, indeed, has come from this source that it is regarded as a harbinger of a revival of the flush times which prevailed here several years ago. Though prices in Iron are lower than ever known in this district operations are going along steadily, and a number of the larger plants are preparing to increase their capacity for production. Notable among these is the Eureka Company, of Oxmoor, who will, it is reliably reported, begin within the next month the erection of two 125-ton furnaces. Another new furnace, the building of which will begin next month, is at Bessemer, by the De Bardeleben Coal and Iron Company. In addition to this there are six new furnaces now building in the district. A close calculation shows that, with what there is now in course of erection in this city, by early spring there will be \$1,500,000 worth of building going on. This with the recent renewed inquiry for centrally located real estate largely mitigates the depressing influence of the state of the Iron market. Among the recent enterprises set on foot by the Birmingham people, who, by the way, have not confined themselves to operations immediately at home, is the Benton Land and Iron Company, a corporation just formed at Cleveland, Tenn., for the development of a deposit of Brown Iron Ore averaging 55 % of Metallic Iron and a minimum of 85 feet thickness. The remarkable thing about this Ore deposit is that is one of the rare instances of stratified brown Ore in this country. The enlarged Williamson Furnace here went into blast recently and is now in satisfactory operation. Though only one of the five Sheffield furnaces is running, it is intended soon to blow in the other four, a sufficient supply of Ore having been secured for their consumption.

The Henderson Steel Works went out of blast on Saturday, in order, it is given out, to enlarge the plant, which has been making a daily output of about 6 tons of good quality Steel. Foundries and machine shops keep full of orders and seem to have all they can do for some time ahead.

A rumor has it that Mr. Andrew Carnegie, who was here the latter part of the week with a number of railroad celebrities, making a tour of the South, has bought a large body of Ores, and that he designs, with local capitalists, to test the Ore for Steel properties. Mr. Carnegie, at a dinner given the visitors, expressed himself as greatly surprised both at the solidity of the various enterprises and at the vastness of the resources.

## Louisville.

LOUISVILLE, KY., February 11, 1889.

**Pig Iron.**—The market continues in an unsatisfactory condition, the price of Iron being very low. We have not heard of offerings being made, however, on a lower basis than that reported for the last two weeks. Several of the furnaces that have made sales at bottom figures have withdrawn from the market, having sold what Iron they cared to place for the next 60 days, so that the market has a chance to slightly recover. It is hoped that a different tone will be manifest before the principal sellers in the last decline feel it wise to go on the market again to sell their product. Current quotations:

Southern Coke, No. 1 Foundry,	new classification.....	\$14.75 @ \$15.25
Southern Coke, No. 2 Foundry,	new classification.....	14.25 @ 14.75
Southern Coke, No. 3 Foundry,	new classification.....	13.75 @ 14.25
Gray Forge.....		13.25 @ 13.75
White and Mottled, different grades.....		12.75 @ 13.25
Silver Gray, different grades.....		13.00 @ 13.50
Southern Charcoal, No. 1 Foundry		16.25 @ 16.75
" " " " " " " " " " " " " " " "	No. 1 Mill.....	14.75 @ 15.25
Southern Car-Wheel, standard	brands.....	21.75 @ 22.75
Southern Car-Wheel, other brands		18.00 @ 19.50
Hanging Rock Coke, No. 1 Foundry.....		15.50 @ 16.00
Hanging Rock Charcoal, No. 1 Foundry.....		19.50 @ 21.00
Hanging Rock, Cold Blast.....		20.75 @ 23.75

C. J. Kent and T. N. Mordue, of the late firm of Kent & Mordue, and Graham Macfarlane, late receiver of the Breckenridge Cannel Coal Company, have formed a copartnership for the purpose of conducting a general Iron, Coal and Coke business. They have recently opened a general Coal and Iron yard in Louisville. They are prepared to furnish storage for Pig Iron and other similar material, and issue warehouse receipts for the same. They are owners of the output of some of the best Cannel Coal mines, and will also handle Connellsville and West Virginia Coke, New River Smithing Coal and the best grades of Anthracite and Jellico Coal.

## Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts.,  
CHATTANOOGA, February 11, 1889.

**Pig Iron.**—There is a very perceptible bitter feeling prevailing among producers upon the subject of prices, but otherwise the situation is but little removed from that of our last report. It is notable that some of the companies are sold far ahead (one company as much as 100,000 tons), and, consequently, out of the market for some time to come. The storage system appears to be universally popular, and has had its influence in restoring confidence in the future, and the furnaces are much more indifferent about making and accepting offers than they were a few weeks ago; hence it seems very easy to see the reason why a bitter feeling prevails through the producing districts. There has been no further concession in prices, and there are many cases where offers have been made that were refused that would have been accepted a short time ago. One furnace, three days ago, refused 2000 tons No. 2 at \$12.50 at furnace bank, to be delivered from April to July, although they would have taken it for immediate delivery on spot cash. Many producers are firmly of the opinion that prices will advance within the next 30 to 50 days at least 50 cents to \$1 per ton, and there are many conditions existing that would seem to justify this opinion.

**Miscellaneous.**—A recent trip through Alabama and parts of Georgia has developed the facts beyond controversy that the present year will see many more new manufacturing enterprises started up and completed than any year in the past. We do not refer particularly to blast furnaces,



of which there are a few in course of construction, but rather to minor manufactories, many of which will be put up with a view of utilizing the products of our furnaces and cognate articles.

## Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave.,  
Pittsburgh, February 12, 1889.

River navigation has been suspended for over a week, but, as the winter season is pretty well advanced, it will probably be resumed before long.

**Pig Iron.**—The market continues unsettled. It is contended by some operators, who are giving the market a good deal of attention, that if prices go much lower a general shut-down of all the furnaces in the Pittsburgh district for 30 or 60 days would have a good effect. Prices have further declined, and it is the belief of many that they have about reached bottom. We quote as follows:

Neutral Gray Forge.....	\$14.25 @ \$14.50, cash.
All Ore Mill.....	15.25 @ 15.50, "
White and Mottled.....	13.50 @ 14.00, "
No. 1 Foundry.....	16.50 @ 16.75, "
No. 2 Foundry.....	15.75 @ 16.00, "
No. 3 Foundry.....	14.75 @ 15.00, "
Charcoal Foundry.....	20.00 @ 24.00, "
Cold Blast Charcoal.....	24.00 @ 27.00, "
Bessemer Iron.....	16.25 @ 16.50, "

Included in the sales reported for the week were 1500 tons Gray Forge at \$14.50, cash; 1750 tons Bessemer at \$16.50, cash, and 700 tons Southern Cold Blast Charcoal at \$247, cash.

**Muck Bar.**—Continues very dull and prices are weak, offering freely at \$27, and sales, it is said, have been made as low as \$26.75, cash. Some large contracts for delivery this month have been repudiated by the buyers on the ground that the quality was not up to specifications; but it is intimated that if the market had gone the other way there would have been no trouble, so far, at least, as the buyers were concerned.

**Spiegel.**—Small sales of Spiegel, 20 %, at \$28.50 @ \$29, and Ferromanganese, 80 %, at \$56 @ \$56.50.

**Manufactured Iron.**—The demand for all kinds of Manufactured Iron continues light, and as long as there is a possibility of prices going still lower buyers will hold off. Once the market becomes settled there will no doubt be a considerably improved trade, as stocks, both in the hands of jobbers and large consumers, are known to be light and will soon have to be replenished. Prices continue weak, in sympathy with the raw article. Bars, 1.75¢ @ 1.80¢; Plates, 2.15¢ @ 2.20¢; No. 24 Sheet, 2.80¢ @ 2.85¢, all 60 days, 2 % off for cash. Skelp Iron, 1.75¢ @ 1.80¢ for Grooved, and 1.95¢ @ 2¢ for Sheared. There is a fair business in Skelp this year, but prices continue unsatisfactory.

**Nails.**—There is little or no change to note in the Nail trade here; there is little or nothing doing, and there is not likely to be much, if any, improvement in the demand here.

**Wrought Iron Pipe.**—There is a very fair business for this season of the year, when it is usually dull, but there is continued complaint in regard to prices, which are very irregular and unsatisfactory, and until there is an improved demand it is not likely that prices will stiffen up much. We continue to give discounts on large lines as a week ago: on Black Butt-Welded Pipe, 55 and 5 % @ 57 %; on Galvanized do., 50 and 5 %; on Black Lap-Welded, 65 % @ 67½ %; on Galvanized do., 55 and 2½ %; 2-inch Tubing, 11¢ @ 12¢-3/4 foot, net; 5½-inch Casing, 35¢ 3/4 foot, net; Boiler Tubes, 65 % off regular list.

**Old Rails.**—Continue dull, but prices remain about as quoted a week ago, \$23.50 @ \$24 for American Tees. It is the belief of well-informed operators that the

lowest point has been reached, and that as soon as the demand sets in there will be an advance. Rails are worth as much at the seaboard as they are here, and they are higher across the water than at New York, and while this is the case the importations will continue light; moreover, the severe weather of the past week has suspended the work of lifting Rails, and besides the supply in this country is steadily growing less every year and the time is not far distant when Old Iron Rails will be a thing of the past, as there are no new ones being made and have not been for several years past. Old Steel Rails are quoted at \$18 @ \$18.50 for short and \$20 @ \$20.50 for long lengths.

**Steel Rails.**—Manufacturers continue to quote at \$28, cash, but that means for small lots; large blocks can be bought for a good deal less; but whether the reports from the East are true, that sales have been made here as low as or equal to \$26, we are not prepared to state. It is evident, however, that the mills are all anxious for business.

**Billets.**—Bessemer-Steel Billets are still quoted at \$28, cash, at which price a sale of 5000 tons of 4-inch was reported. Nail Slabs dull and nominal at \$27.50. Domestic Bloom Ends nominal at \$18, and Crop Ends at \$18.50, cash.

**Railway Track Supplies.**—Spikes unchanged at 2.05 @ 2.10¢, 30 days, on cars here: Track Bolts, 2.75¢, with Square and 2.85¢ with Hexagon Nuts; Splice Bars, 1.75¢ @ 1.80¢.

**Old Material.**—The demand continues light and prices weak. No. 1 Wrought Scrap, \$20 @ \$20.50, net ton; Wrought Turnings, \$13 @ \$13.50; Car Axles, \$24.50 @ \$25; Cast Scrap, \$14.50 @ \$15, gross; Cast Borings, \$11 @ \$12; Old Car Wheels, \$19.

## New York.

Office of *The Iron Age*, 66 and 68 Duane street,  
New York, February 13, 1889.

**American Pig.**—The Thomas Iron Company report having booked orders from regular customers aggregating 140,000 tons. Of this, 65,500 tons are reported to be No. 2 Plain Foundry and Gray Forge, at \$15.30, the balance being Foundry Iron. The company quote No. 1 Foundry, \$18, and No. 2, \$17. It is, of course, pretty generally understood that the company will protect their trade during the time of the delivery. What effect the figures now named by the Thomas Iron Company will have upon other sellers, North and South, remains to be seen. The cutting lately has not by any means come from Southern producers alone, No. 2 Northern having been offered close to \$16, and also No. 1 at \$17.50, and less. It is possible that this was done in anticipation of an announcement of \$17 and \$16 as the opening price, and as the result of rumors that sales for season delivery had been made at those figures. We quote standard brands, nominally, \$17.50 @ \$18 for No. 1 Foundry, \$16.50 @ \$17 for No. 2 Foundry, and \$15.25 @ \$15.50 for Gray Forge, all at tidewater.

**Scotch Pig.**—We quote: Coltness, \$20.50 @ \$21; Shotts, \$20 @ \$20.50; Langloan, \$20 @ \$20.25; Summerlee, \$20.25 @ \$20.50 and Dalmellington, \$19.25 @ \$19.50.

**Plates.**—We quote Iron Tank, 2¢ @ 2.2¢; Shell, 2.25¢ @ 2.4¢; Steel Tank and Ship Plate, 2.15¢ @ 2.25¢; Shell, 2.35¢ @ 2.5¢; Flange, 2.6¢ @ 2.75¢, and Fire-box, 3¼¢ @ 4¢.

**Structural Iron.**—We quote Sheared Plates, 1.9¢ @ 2¢; Universal Mill Plates, 2¢ @ 2.1¢; Angles, 2¢ @ 2.10¢; Tees, 2.4¢ @ 2.6¢, and Channels and Beams, 2.8¢ on dock for all sizes.

**Bar Iron.**—We quote: Carload lots on dock, half extras, Common, 1.65¢ @ 1.75¢; Medium, 1.75¢ @ 1.8¢, and Refined, 1.8¢ @ 2¢.

**Steel Rails.**—We note sales of Eastern mills aggregating about 20,000 tons, chiefly for Southern delivery, at private terms, among which is one lot of 7000 tons for delivery at Emporium, Pa. It is understood that some of the sales have been made by a mill which has now practically filled its allotment, and has for the present withdrawn from the market. From the West comes the report that an Ohio mill has closed for about 8500 tons with Ohio roads, these orders having been in the market last year, and involving a "deal" for the delivery of coal to the mill in question. The situation is still unsettled, and \$27 @ \$27.50 remain nominal quotations at Eastern mill. The report of the Board of Control for February 1 has not yet been issued.

**Tool Steel.**—The market continues demoralized, and tempting concessions are made to large buyers, both in the way of low base prices and in cuts on extras.

**Wire Rods.**—No business is reported in foreign Rods, which remain nominally \$42 @ \$42.50. The position of Eastern Wire drawers, under the circumstances, is very difficult, taking into account the low prices on their products.

**Old Rails.**—We note sales aggregating about 1500 tons of Tees, from American roads, at a price equivalent to \$23.50, on cars at Jersey City. We hear of a sale also of 1000 tons of Tees, delivered in Western Pennsylvania, at \$24.50.

**Track Material.**—We quote Spikes \$2 @ \$2.10, according to quantity, and Angle Bars 1.80¢ @ 1.85¢, delivered. Of the latter, a round order for a 15,000-ton lot of Rails was placed this week with a Western mill.

## Metal Market.

**Copper.**—Since our last week's report spot Chili Bars and Good Merchantable gave way from £77. 15/ to £79. 10/ this morning, and futures from £77 to £75; sales 1200 tons. The market here has meanwhile been stagnant at nominally 16¼¢ for Lake and 15¼¢ @ 16¢ for casting brands. Early in the week it was again reported that the Anaconda Mine is to receive \$300,000 monthly from the syndicate for remaining idle this year. There have again been afloat both in London and here some conflicting rumors with reference to the position of the syndicate. One of them was that the management was to be transferred from Mr. Secrétan to other members, his course of action lately not meeting with the full approval of the other parties interested. Another rumor asserted that the Lake Superior mines had, so far, declined to accede to the condition made them of curtailing production. The import of American Copper into Liverpool and Swansea for January has been 2728 tons Fine, as compared with 2529 same month last year. The export of Ingot Copper from the United States last year has been 31,664,046 lb, of ingot against 12,847,507 in 1887. The 11 active producing Lake Superior Copper mines turned out last month a total of 4564 tons of mineral, against 3686 tons by eight mines in January, 1888, and 4562 tons by the same 11 mines in December. The January output is equal to about 6,330,000 lb of fine Copper. The closing quotations this morning were 16¼¢ @ 16¼¢ for Lake Copper. We print elsewhere the preliminary statistics of the U. S. Geological Survey.

**Tin.**—At the time we wrote our last report spot Tin was still worth in the London market £97, but has declined since to £94. 12/6 yesterday, while futures gave

way from £97. 15 to £97. 7/8, the sales aggregating 1000 tons. In this market 50 tons February were sold at 21½¢ @ 21¼¢, but later on the market became demoralized, 20 tons March being forced off at 21.10¢, 10 tons April at 21.20¢, and 40 tons May from 21.40¢ down to 21.20¢, the market winding up at 21.10¢ @ 21.30¢ for spot, February and March. The decline is said to have been due in the London market to the heavier shipments from the Straits. The actual shipments from the Straits to the United States in January amounted to 550 tons, as compared with 400 tons same month last year; to England they were 1200 tons, against 3500. The import of Tin into the United States in 1888 was 34,204,135 lb, against 25,334,533 lb in 1887, the re-export being only 123,952 lb, against 308,660 lb. This morning the London quotation is £94. 15/ for spot and £95. 10/ for futures. The spot quotation this morning in our own market is 21½¢. **Tin Plates.**—Our market has been dull and rather weaker, owing chiefly to the marked decline in Pig Tin. We quote, large lines, per box: Siemens-Martin Steel, Charcoal Finish, \$4.75 @ \$5.50; Ternes \$4.12½ @ \$4.25; Coke Tins, \$4.22½ @ \$4.30, and Wasters \$4.12½ @ \$4.15. The import of Tin Plates into the United States in 1888 has been 667,231,988 lb, as compared with 635,792,760 lb in 1887, while the re-export did not exceed 815,318 lb, against 1,080,515 lb in 1887. Liverpool quotes Coke Tins 13/.

**Lead.**—The position of this metal has been so thoroughly undermined, unsettled and demoralized by what happened during the last quarter of 1888 in conjunction with stagnation in trade, large stocks overhanging the market and the enormous increase in production that it is difficult to sustain prices even at the comparatively low stage they have reached of 3.65¢ @ 3.60¢, at which some 1500 tons were sold in the open market since our last, those of the West being quiet at 3.45¢. Soft Spanish declined in London from £12. 17/6 to £12. 15/.

**Spelter.**—Only a moderate business has been transacted on the spot at 5¢, or a fraction less, for Common Domestic; still, however, sparingly offered and generally held with firmness here as well as out West, the supply being restricted and only waiting for the expected spring revival in the demand. From London Silesian is cabled £17. 12/6 this morning, while here this brand may be nominally quoted 5¼¢ @ 5½¢.

**Antimony.**—With a gradually improving London market, Hallett cannot be had for less than 11¼¢, nor Cookson under 13¼¢, for which there remains an active demand with an extremely moderate supply.

### New York Metal Exchange.

The following sales are reported:

FRIDAY, February 8.	
40 tons Tin, April.....	21.50¢
48 tons Lead, March.....	3.75¢
16 tons Lead, spot.....	3.77½¢
16 tons Lead, April.....	3.80¢
SATURDAY, February 9.	
10 tons Lead, spot.....	3.70¢
MONDAY, February 11.	
30 tons Tin, May.....	21.40¢
16 tons Lead, spot.....	3.70¢
TUESDAY, February 12.	
20 tons Tin, March.....	21.10¢
10 tons Tin, April.....	21.20¢
10 tons Tin, May.....	21.20¢
WEDNESDAY, February 13.	
10 tons Tin, spot.....	21.30¢
10 tons Tin, April.....	21.45¢

Important coke regions in Central Pennsylvania are being made accessible by the construction of new railroads. Deeds have been recorded at Brookville by the Fisher Improvement Company upon 2600 acres of land located along the Big Mahoning Creek. The sum paid for this is \$169,775.

## Coal Market.

The Anthracite Coal market is still handicapped by a production disproportioned to the demand, and prices are maintained with difficulty. Individuals have made sales as low as \$4.25 for Stove and \$4 for Chestnut, alongside. A break by Ario Pardee & Co., of the Lehigh Coal Company, caused a sensation, but was explained as affecting only the production of the private collieries at Hazleton, as the large companies would not attempt to compete. It was also said that the reported 25-cent cut by Pardee was simply retaliation directed against Coxe Brothers & Co., whose mines adjoin and who have fixed prices regardless of recognized schedules. Restriction is still the order of the day. For the week ending February 9 the total of shipments from the mines was 460,535 tons, a decrease of 53,000 tons compared with the previous week and over 100,000 tons decrease compared with the corresponding week in 1888. Since January the production aggregates 3,208,319 tons, a decrease of only 44,000 tons compared with the same time last year.

The Bituminous trade is dull. Report says that a Soft Coal trust has been formed to stop the competition between the Kanawha and Monongahela operators, and a movement for reorganization of the Clearfield Bituminous Company is spoken of; also another spur or extension of the Bush Creek Railroad, 12 miles long, to penetrate the Clearfield region.

The case of Coxe Brothers & Co. against the Lehigh Valley Coal Company was finished on Tuesday before the Interstate Commissioners, so far as the testimony is concerned, and counsel will submit argument on March 1.

In his examination Eckley B. Coxe testified as to the cost of Coal production. The general average in the Lehigh region he placed at \$1.45 7/8 ton. He said that his firm last year produced and sold 1,139,332 tons of Anthracite Coal, from which they made a net profit of less than \$7000. The income from royalties was very large, however.

Mr. Frank M. Kelley, official representative in this city of the Reading Coal interests, has fully entered upon the discharge of his duties at the Washington Building.

The total output of Coal in Tennessee in 1888 was 1,967,297 tons, against 1,715,290 tons in 1886. Total value of Coal mined, \$2,262,391.

Important purchases of Coal lands not far from Pottsville, and south of Broad Mountain, are said to have been made lately by Calvin Pardee, in the interest of the Lehigh Valley Railroad.

## Financial.

Accounts relating to trade and finance are more cheerful. The most glaring exception is the collapse of the Western Coal and Iron Company immediately following the failure of the Pacific Guano Company, of Charleston and Boston. The volume of general business is very large, due in no small measure to speculative activity. The aggregate clearings of all principal cities show a gain of 29% compared with last year. In New York the gain is 35.6%; outside of New York 18.4%. Northwestern points are irregular, St. Paul and Minneapolis falling behind, while Duluth, Denver and Kansas City gain largely. Industrial centers at least hold their own. It has been incorrectly assumed that interstate rates would be affected by the reduction of Iowa rates to the Commissioners' tariff. Iowa rates are higher than those of States East, and railroad managers now admit that none but local

rates will be affected. Iowa shippers will demand that all overcharges paid by them pending Judge Brewer's decision be refunded. The sum is claimed to be \$3,000,000. A railroad presidents' meeting relating to the general subject will soon be held in this city. In the case of the North River Sugar Refining Company, charged with illegal combination, Judge Barrett denied the application for a stay of proceedings pending an appeal from his previous order dissolving the company and directing a receivership.

Colonel Lamont, the President's adviser, is to locate in this city after the 4th of March as president of the Avenue C Surface Railway Company. The commutation of the sentence of Jas. D. Fish, former president of the Marine Bank, is followed by the suit of Yates & Potterfield, creditors of Grant & Ward, against Julien Davies, assignee of the firm, to compel him to give an accounting of all his transactions in connection with the affairs of the firm since he accepted the assigneeship, May 8, 1884.

The Stock Exchange markets were irregular, each advance being followed by reaction. On Thursday the Villard shares and New England were the features, with the whole market active and strong. On Friday, among other causes of depression, was the failure of the Pacific Guano Company. The acceptance of over \$3,000,000 bonds by the Secretary of the Treasury served as an offset. On Saturday business was dull. The bank statements had little influence. Transactions in bonds were large. Union Pacific closed at 64, but rose on Monday to 66½, owing to the prospect of Congressional action on the Funding bill. The general list was depressed by a break in Burlington, but closed buoyant, led by the Vanderbilts. The trunk lines were firm on the fact that a meeting of the Executive Committee had been called to ratify the new agreement, and that the presidents would act subsequently. On Tuesday the grangers were unfavorably affected by the news that only 15 out of 22 roads had signed the presidents' agreement. One feature was an erratic speculation in Pullman on the announcement that \$5,000,000 of new stock would be issued.

Government bonds were firm at the following quotations:

U. S. 4½, 1891, registered.....	108
U. S. 4½, 1891, coupon.....	109½
U. S. 4s, 1907, registered.....	128½
U. S. 4s, 1907, coupon.....	128½
U. S. currency 6s.....	120

Sterling is firm, with posted rates at 4.87¢ @ 4.89¢.

Contracts were signed on Tuesday for the construction of 250 miles of the Charleston, Cincinnati and Chicago Railway, running from Charleston, S. C. via Rutherfordton, N. C., to the Ohio River at Ashland, Ky. The company have already under operation 400 miles of road. The projectors of the scheme claim that this line will make a direct route of 800 miles from Charleston, S. C., to Chicago, or 100 miles shorter than any other line from Lake Michigan to the Atlantic Coast, and that it opens up the richest mineral, timber and coal country on the continent. A. B. Harris, of Boston; Frank Coxe, of Philadelphia; Wharton Barker, of Philadelphia; R. A. Johnson, of Boston; General Thos. L. Rosser, and other well-known men are interested.

The weekly exhibit of the Associated Banks shows an expansion in loans of \$8,103,900, a loss in cash of \$3,789,100 and an increase in deposits of \$3,816,400. The banks lost \$4,740,200 in surplus reserve and hold \$14,152,975 above legal requirements. By the purchase of \$3,000,000 of bonds on Friday at a slightly advanced price the Secretary of the Treasury liberated nearly all the surplus money accumulated thus far during the month. An



increase of about \$21,500,000 in bank loans within a month is assumed to be evidence of requirements in the street not being warranted by the mercantile demand. Time loans on good collateral were quoted at 3% for 60 and 3½ @ 4 for 90 days and 4½ @ 5 for four, five and six months. Rates are 4 @ 4½ for 60 to 90 days' indorsed bills receivable. Exports of specie during the week were \$477,000 and imports \$186,000.

In several important commodities prices show an upward turn, in pleasing contrast with the drooping tendency noticed for several weeks. Wheat advanced 2¢ @ 2½¢ above the latest of Saturday for spot, and flour had a better tone. Exports of provisions were again very large, comprising 9,000,000 lb of bacon and 8,000,000 lb of lard from all the Atlantic ports. Prices of cash lard in New York broke several points. Coffee decidedly firm for spot goods. Cotton was stronger on the Bureau report indicating only 6,800,000 bales for the outside crop. In the West the fact is emphasized that an incalculable amount of corn has been saved this winter by mild weather, so that the reserve is larger than for many years. Exports of corn from Baltimore during the week exceeded 4,000,000 bushels. In dry goods jobbers notice a widening demand, but are much exercised by a threatened war in prices, originating in Chicago. Exports of leather are more active. A purchase of tea comprising 52,000 packages was the largest transaction of the kind known in this market.

A significant feature in trade is shown by the official returns of the foreign commerce of this port for the month of January. The imports for this month were larger by \$5,000,000 than for any corresponding month in the history of the port, amounting to \$45,432,699, as compared with \$38,000,000 for the same month last year. The exports were on a corresponding scale, the total, exclusive of specie, being \$184,834,000, showing a gain of \$6,000,000 in the shipments of merchandise compared with 1888. A season of uninterrupted navigation and favorable conditions for railroad transportation serve to explain the extraordinary gains.

Imports of merchandise at this port during the week and since the 1st of December have been exceptionally large for this season of the year. For the week the value is \$10,413,000, of which nearly \$3,600,000 represents dry goods. Since January 1 the total is \$60,470,000, as compared with \$55,825,000 for the corresponding period in 1888 and \$51,420,000 in 1887.

## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, February 13, 1889.

The market for Block Tin has been unsettled and weak under the pressure of large lots for sale, due, it is alleged, to anticipation of heavy shipments from the Straits. The decline during the week was about £2. 10/, of which 10/ has been recovered the past few days under improved demand.

The Copper situation is without visible change. The syndicate agents still take up prompts at £77. 10/, but seemingly ignore three months' futures. "Outside" offers of the latter are said to be made at as low as £70, in the face of the quotation of £75 as the syndicate's nominal price. It is also stated that a line of 500 tons was offered at as low as £62, sellers' option all the year, without leading to business. Sales of Best Selected English are

said to have been made at £72. While prices are thus paradoxical, and legitimate business at a minimum, the negotiations between the syndicate representatives and the mining companies and other interests concerned in recent projects are shrouded in mystery that tends to additionally complicate the situation.

A larger business is reported in Tin Plate, mainly on the basis of 13/ for B. V. grade Cokes for early delivery. A line is said to have been closed out in Liverpool recently at 12/6. Makers continue to express confidence in a higher market. The stock at British shipping ports is estimated at 299,000 boxes. The exports to the United States last month were 21,000 tons. The Aberdare Company have purchased the Panteg Forge, and are erecting mills there to make Plates. Three mills have been started up at the Pontymister works, and two at the Victoria works. The Old Lodge Iron Works are being converted into a Plate works.

There is no improvement whatever in the American demand for Pig Iron, but the Continental trade is larger, and this, together with a good home demand, has developed a stronger market. The better tone in time has led to freer speculative purchases of Scotch "warrants," under which prices advanced to 42/. Exports to the United States last month were 10,000 tons. On most brands of Scotch Pig prices have advanced 6d @ 1/ during the week. Middlesbro' Pig has sold at 6d. advance, as has also Bessemer Pig, while holders of the latter ask an additional 6d at the close. Spiegel-eisen failed to move at the advanced prices asked last week, and some sellers put their figures back to 80/.

Negotiations in the direction of forming the Steel Rail syndicate are still pending, but up to the present time nothing definite has been accomplished. The price of Rails continues to harden, however, under the influence of an active demand, and makers are now asking a further 5/ rise. Billets are also stronger, with 2/6 advance generally quoted, but Blooms and Slabs have been sold from stock at concessions from the extreme figures asked last week.

**Scotch Pig.**—There has been a more active trade, particularly in the best markets, and the market is strong.

No. 1 Coltness, f.o.b. Glasgow	52/
No. 1 Summerlee, " "	51/
No. 1 Gartsherrie, " "	49/
No. 1 Langloan, " "	50/6
No. 1 Carnbroe, " "	44/
No. 1 Shotts, " at Leith	49/6
No. 1 Gleggarnock, " Ardrossan	47/6
No. 1 Dalmeilington, " "	43/6
No. 1 Eglinton, " "	42/
Steamer freights, Glasgow to New York, 4/; Liverpool to New York, 10/.	

**Cleveland Pig.**—A large business has been done during the week, and the market is strong at 6d advance. No. 1 Middlesboro', G.M.B., 37/6; No. 3 ditto, 34/6.

**Bessemer Pig.**—Transactions more extensive in volume, with a further 6d advance in price obtained. West Coast brands, mixed numbers, 45/6, f.o.b. shipping point.

**Spiegeleisen.**—The demand has been fair, but sellers were unable to secure the advance asked last week. English 20% quoted 80/, f.o.b. N. W. England shipping point.

**Steel Rails.**—Prices are up a further 5/, and the market strong, with de-

mand brisk. Heavy sections quoted at £4. 10/, and light sections £4. 15/ @ £5, f.o.b. at N. W. England shipping point.

**Steel Blooms.**—Trade fair but at somewhat modified prices. We quote £3. 17/6 for 7 x 7, f.o.b. at N. W. England shipping point.

**Steel Billets.**—The demand continues free and prices are firm at a slight advance. Bessemer, 2½ x 2½ inch, £4. 5/, f.o.b. at N. W. England shipping point.

**Steel Slabs.**—Trade in this line rather slow and prices somewhat irregular. Bessemer, £3. 17/6, f.o.b. at N. W. England shipping point.

**Old Rails.**—Demand continues rather slow and prices are nominal. Tees quoted at £3. 5/ @ £3. 6/, and Double Heads, £3. 8/ @ £3. 10/, c.i.f., New York.

**Scrap Iron.**—There is a fair business and prices are steady. Heavy Wrought quoted at £2. 2/6 @ £3. 7/6, f.o.b.

**Crop Ends.**—The dealings are fair and at about former prices. Bessemer quoted £2. 10/ @ £3. 12/6, f.o.b.

**Tin Plate.**—Trade has been slow, and prices are barely steady. We quote, f.o.b. Liverpool:

IC Charcoal, Allaway grade	15/3 @ 15/6
IC Bessemer Steel, Coke finish	@ 1/4
IC Siemens	@ 13/6
IC Coke, B. V. grade	13/ @ 13/3
Charcoal Terne, Dean grade	12/ @ 12/6

**Manufactured Iron.**—There is still a good business in most lines and prices remain very steady. We quote, f.o.b. Liverpool:

Staff. Ord. Marked Bars	£ s. d.	£ s. d.
" Common	@ 8 2 6	@ 5 15 0
Staff. Bk Sheet, singles	7 12 6 @	@ 13/6
Welsh Bars (f.o.b. Wales)	5 2 6 @	@ 5 5 0

**Tin.**—The market irregular and unsettled, with trading active. Straits quoted to-day at £94. 15/, spot, and £95. 5/ @ £95. 10/ for three months' futures.

**Copper.**—Very slow trading and prices difficult to quote. To-day's prices are: Chili Bars, £77. 10/ for spot, and £70 @ £75 for futures. Best Selected, wholly nominal.

**Lead.**—A moderate business at steady prices. Quoted at £12. 15/ for Soft Spanish.

**Spelter.**—The demand moderate and prices about steady. Quoted at £17. 15/ for ordinary Silesian.

## Foreign Markets.

### EQUIVALENTS

	Cents.
Franc, Peseta or Lira	19.3
Florin (Netherlands)	40.2
Florin (Austria)	35.9
Vireis (Portugal)	41.8
Vireis (Brasil)	54.6
Mark (Germany)	23.8
Picul	134.

### EAST INDIES.

SINGAPORE, December 30, 1888.—**Tin.**—Our last report was dated December 17, since when the volume of business has been less than usual. Tin has kept very steady at about \$37 per picul, but closes at \$37.25, and supplies are still restricted by heavy floods, otherwise we should have had a large production to deal with. **Gum Copal** is in moderate request and supply at steady prices at \$11 and downward. **Gum Damar.**—No good quality has been offered for sale. **Tonnage.**—Sailing vessel rates have been fairly maintained, while there has been some decline in steam freights to England. There is nothing offering for New York via Canal; the Norwegian bark Norway has been fixed via Cape for New York, while the Antioch and Penobscott are still loading for Boston. Ex-

change is firm at 3/2 ¢ dollar for 6 months' sight credits. On the 24th inst. the steamer Benoue took for New York from here 8396 piculs of Tin.—*Gillilan, Wood & Co.*

**MANILA, February 4, 1889.—Hemp.**—There are buyers at \$16.25 ¢ picul, against \$9 same time last year, equaling 9 ton, cost and freight, £55. 3/6, as compared with £32. 2/6 in 1888; there have cleared for the United States since last cable none, against 4000 bales last year; since January 1, 36,000, against 17,000; loading for do., 45,000, against 3000; cleared for England since January 1, 20,000, against 21,000; loading for do., 17,000, against 2000; cleared for all other ports, 2000, against 2000; receipts at all ports since last cable, 13,000, against 15,000; since January 1, 60,000, against 49,000 in 1888 and 41,000 in 1887. **Freight.**—\$7.50, against \$5.50. **Exchange.**—6 months' sight 3/8 ¢, against 3/8 ¢.—*Ker & Co., per cable direct, through Mr. Charles Nordhaus, 80 Water street, New York.*

**SINGAPORE, February 8, 1889.—Tin.**—There have been shipped during January from the Straits Settlements to the United States 350 tons, against 400 last year; to England, 1200, against 3500.—*Gillilan, Wood & Co.*

#### BELGIUM.

**BRUSSELS, February 2, 1889.—Iron.**—As had been foreseen, the associated rolling mills have resolved to raise the price of Merchant and Sheets 50 centimes ¢ 100 kg. The present price fixed by the syndicate is consequently 12 francs ¢ 100 kg. for No. 1, for export, and 12.50 for home consumption, while Sheets No. 2 are 15.50 for both export and home use. Pig Iron is extremely scarce. Athus sold 42,900 tons, to be delivered during the second quarter, at 4.70. This is all his capacity will allow him to turn out. As for Beams, a good current of trade still exists, orders flowing in a steady stream despite the active competition that comes to us from the north of France. The latter have even beaten our makers in the shape of some contracts they made for low quality Beams, f.o.b. at Antwerp at 11.25. They cannot, however, compete with our makers as advantageously in quality next to the lowest, so that frequently they share the execution of third quality Beam orders with our own makers. In this manner the latter bought, f.o.b. at Antwerp, from 12 francs to 12 francs 12½. The Dyle-Bacalan Car Works received an order from Holland of 450 cars, but was unable to secure another order for five bridges for Tava, for which Dutch builders got the preference. It is now a positive fact that the cupolas for the Meuse forts will be built by foreign concerns, such as the Gursen, of Magdeburg; the Creusot, the Saint-Chamond, Châtillon and Commentry, but some of our Belgian works participate therein on joint account.—*Moniteur des Intérêts Matériels.*

#### SPAIN.

**BILBAO, January 26, 1889.—Pig Iron.**—The amount of Pig Iron turned out in our immediate vicinity aggregated last year 135,200 tons, distributed as follows:

	Tons.
<i>Sold for Domestic Use.</i>	
Altos-Hornos.....	8,500
San Francisco (Mudela).....	14,800
La Sociedad Vizcaya.....	26,600
<i>Sold for Export.</i>	
Altos-Hornos.....	13,400
San Francisco.....	25,300
La Sociedad Vizcaya.....	47,200

The Sociedad Vizcaya is the youngest of the three.—*Bilbao Marítimo y Comercial.*

#### GERMANY.

**HAMBURG, February 2, 1889.—Iron.**—The Rhenish-Westphalian Iron market has maintained its firmness. Pig Iron has been even more active. This may be said with reference to Spiegel in particular, makers now declining to sell any further amounts deliverable during the second quarter at 59 marks. There has been an uninterrupted but slow upward movement in Forge Pig, which is now 1½ marks higher than it was a week ago, the range now being 51.50 @ 53 marks ¢ ton, while at Siegen no more can be got at 50. Thomas has been active at 46, Bessemer at 55. Foundry Pig was also better, the range being from 54 to 61; Luxembourg may be quoted 54.50 @ 42 as a range as to quality. English Bessemer is worth 45/. Boiler Plates have advanced 5 marks, and other rolling mill products in proportion. The Wire branch revives comparatively slowly; machine shops and carworks continue doing well, the latter in particular, 12,000 freight and passenger cars having just been ordered for the domestic railways. We quote Wire Rods 106 @ 108, Steel Rails 120 @ 130, and ditto for mines 110 @ 115. Metals are steady and unaltered.—*Borsenhalle.*

#### The Stove Association.

From the address of George H. Barbour, president of the National Stove Association, we call the following:

*Gentlemen.*—Another year has passed and we again assemble together for a friendly interchange of opinions and to discuss measures for the general improvement of our business. While it would afford me a great deal of pleasure to be able to say to you that the business at large was upon a substantial and profitable basis, I regret to say that at no time since the organization of this association was there more need of association in the true sense of the term, nor was there ever a time when it seemed so imperative that we should reason together for the purpose of trying to eliminate the evils which have gradually crept into the business, and to endeavor in some way to lay out such plans for the future as will insure fair interest upon the capital invested.

#### STATISTICS OF THE STOVE TRADE.

From the best information I estimate that the value of the production of stoves for the year 1888, as near as possible, is \$33,000,000. This includes, of course, all grades of cooking stoves, ranges and heating stoves. Your secretary will give you this subject more in detail. It may be estimated that about 22½ per cent. of the actual production is a fair percentage of stocks carried over the present year. It would be natural to expect that the average carried over this year would be a little in excess, owing to the very warm weather which has prevailed this season.

While it is somewhat uncertain to predict the future, I state as the best of my judgment that if we have a favorable season's business, meeting with no extraordinary disasters, and go along in even tenor of our way, much higher prices will be obtained for pig iron before the close of the year. I see but one way for any great improvement in this direction, and that is for the furnacemen to curtail their production for a period, by 35 per cent. to 50 per cent.

#### IS THERE OVERPRODUCTION IN THE STOVE TRADE?

Now, to a greater or less extent, these same conditions may exist with our stove manufacturers. It is generally conceded by those well informed that there does exist to-day, and has existed for several years past, an overproduction. To solve this problem is somewhat of a difficulty. I believe there is hardly any manufacturer who intends to produce largely in excess of what he thinks his trade will absorb. Nevertheless, there are few to-day but carry more or less of an excess of stock. We go along from year to year, thinking perhaps instead of increasing next year we will carry less, but we are disappointed.

#### THE HOLLOW-WARE BUSINESS.

Let me call your attention to another subject that I deem worthy of your consideration. The hollow-ware business, as probably all will admit, properly belongs to the stove manufacturer. Is he to-day getting any benefit from it? I think not. On the other hand, it has virtually passed out of his hands, and the trade is controlled principally by the wholesale hardware merchants. It would seem that there is but one of two things to do—either the manufacturers of stoves, as a body, should control it, or else give it up. Under present conditions there is no money in it to any manufacturer, but I believe that they can gain this part of their business back, although it may mean a struggle and a loss of money for a short time. I commend this to your attention.

#### FREIGHT ALLOWANCES.

There is another abuse which has become a very serious matter to all members of

this organization and to all stove manufacturers at large—the allowance of freight and other concessions. They have crept in upon us gradually from time to time, until they are like the "roaring lion seeking whom he may devour." They are a very heavy tax upon any manufacturer, and are increasing instead of decreasing. I am undecided what to suggest in this particular. Their abolition can only be accomplished in one way, in my opinion, and that is by an ironclad agreement among manufacturers, after intelligent discussion by your body.

#### THE PIRATES.

There is one subject which I touch upon with some reluctance; it is a serious one to every stove manufacturer. It is the subject of pirating our goods. I will not go into the details, to give you the volume of business that has been built up by these concerns, which we term, and correctly, too, pirates. I believe I may safely say there is hardly a leading house to-day whose goods have not, to a greater or less extent, been taken, or parts of them taken, and filed up and offered to the trade in the way of repairs at from 2 to 3 cents per pound less than the original manufacturer's price.

Let me call your attention, going back a few years, to the time when, in one of your meetings, I advocated that every member of your association should meet these prices. I think our members believe that it was a great mistake not to have done it. I do not hesitate to say now, had the leading manufacturers, or the majority of our members, adhered to the basis of price, asking only the pirates' prices, we would have seen to-day no such state of things as actually exists. Now, this is a matter which disturbs nearly all of our manufacturers. The pirate has gradually built up his business year by year, adding largely to his stock of patterns, which has been taken from legitimate stoves, filed up and used.

#### DOING BUSINESS ON INSUFFICIENT CAPITAL.

Is there not a state of things existing that is full of danger? Are not a good many of our present stove manufacturers endeavoring to largely increase their business upon too small capital? I have reason to believe this condition exists and it would seem to me that any manufacturer who is trying to do this is placed in a position where he cannot very well maintain his prices. The stove business is very peculiar, as every manufacturer can vouch for. He has to prepare early in the year to manufacture his products. Our spring trade for several years past has been gradually decreased by the use of vapor and coal-oil stoves, so much so that he has to carry his products much longer than in previous years, so that the majority of his sales are made in the fall months. It used to be not difficult to date invoices for fall September 1, four months; but now it is often September 15, and not infrequently October 1, so that from the time he commences to manufacture early, or from the first of the year, he has to carry his stock a much longer time than ever before, and I believe it can be truthfully said that it requires 33 to 50 per cent. more capital than it did five years ago, a point too often overlooked. The remedy seems to be in your own hands. Every manufacturer should know his own circumstances best; I refer to the subject that it may have your best consideration, and while this is something outside of this body to act upon, I may induce some one to consider the matter and find out whether these troubles are not brought about by such a state of things as I have mentioned.

Edge Hill Furnace, one of the Schuylkill Valley anthracite furnaces, is about to go out of blast.



increase of about \$21,500,000 in bank loans within a month is assumed to be evidence of requirements in the street not being warranted by the mercantile demand. Time loans on good collateral were quoted at 3% for 60 and 3½ @ 4 for 90 days and 4½ @ 5 for four, five and six months. Rates are 4 @ 4½ % for 60 to 90 days' indorsed bills receivable. Exports of specie during the week were \$477,000 and imports \$186,000.

In several important commodities prices show an upward turn, in pleasing contrast with the drooping tendency noticed for several weeks. Wheat advanced 2¢ @ 2½¢ above the latest of Saturday for spot, and flour had a better tone. Exports of provisions were again very large, comprising 9,000,000 lb of bacon and 8,000,000 lb of lard from all the Atlantic ports. Prices of cash lard in New York broke several points. Coffee decidedly firm for spot goods. Cotton was stronger on the Bureau report indicating only 6,800,000 bales for the outside crop. In the West the fact is emphasized that an incalculable amount of corn has been saved this winter by mild weather, so that the reserve is larger than for many years. Exports of corn from Baltimore during the week exceeded 4,000,000 bushels. In dry goods jobbers notice a widening demand, but are much exercised by a threatened war in prices, originating in Chicago. Exports of leather are more active. A purchase of tea comprising 52,000 packages was the largest transaction of the kind known in this market.

A significant feature in trade is shown by the official returns of the foreign commerce of this port for the month of January. The imports for this month were larger by \$5,000,000 than for any corresponding month in the history of the port, amounting to \$45,432,699, as compared with \$38,000,000 for the same month last year. The exports were on a corresponding scale, the total, exclusive of specie, being \$184,834,000, showing a gain of \$6,000,000 in the shipments of merchandise compared with 1888. A season of uninterrupted navigation and favorable conditions for railroad transportation serve to explain the extraordinary gains.

Imports of merchandise at this port during the week and since the 1st of December have been exceptionally large for this season of the year. For the week the value is \$10,413,000, of which nearly \$3,600,000 represents dry goods. Since January 1 the total is \$60,470,000, as compared with \$55,825,000 for the corresponding period in 1888 and \$51,420,000 in 1887.

## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, February 13, 1889.

The market for Block Tin has been unsettled and weak under the pressure of large lots for sale, due, it is alleged, to anticipation of heavy shipments from the Straits. The decline during the week was about £2. 10/, of which 10/ has been recovered the past few days under improved demand.

The Copper situation is without visible change. The syndicate agents still take up prompts at £77. 10/, but seemingly ignore three months' futures. "Outside" offers of the latter are said to be made at as low as £70, in the face of the quotation of £75 as the syndicate's nominal price. It is also stated that a line of 500 tons was offered at as low as £62, sellers' option all the year, without leading to business. Sales of Best Selected English are

said to have been made at £72. While prices are thus paradoxical, and legitimate business at a minimum, the negotiations between the syndicate representatives and the mining companies and other interests concerned in recent projects are shrouded in mystery that tends to additionally complicate the situation.

A larger business is reported in Tin Plate, mainly on the basis of 13/ for B. V. grade Cokes for early delivery. A line is said to have been closed out in Liverpool recently at 12/6. Makers continue to express confidence in a higher market. The stock at British shipping ports is estimated at 299,000 boxes. The exports to the United States last month were 21,000 tons. The Aberdare Company have purchased the Panteg Forge, and are erecting mills there to make Plates. Three mills have been started up at the Pontymister works, and two at the Victoria works. The Old Lodge Iron Works are being converted into a Plate works.

There is no improvement whatever in the American demand for Pig Iron, but the Continental trade is larger, and this, together with a good home demand, has developed a stronger market. The better tone in time has led to freer speculative purchases of Scotch "warrants," under which prices advanced to 42/. Exports to the United States last month were 10,000 tons. On most brands of Scotch Pig prices have advanced 6d @ 1/ during the week. Middlesbro' Pig has sold at 6d. advance, as has also Bessemer Pig, while holders of the latter ask an additional 6d at the close. Spiegel-eisen failed to move at the advanced prices asked last week, and some sellers put their figures back to 80/.

Negotiations in the direction of forming the Steel Rail syndicate are still pending, but up to the present time nothing definite has been accomplished. The price of Rails continues to harden, however, under the influence of an active demand, and makers are now asking a further 5/ rise. Billets are also stronger, with 2/6 advance generally quoted, but Blooms and Slabs have been sold from stock at concessions from the extreme figures asked last week.

**Scotch Pig.**—There has been a more active trade, particularly in the best markets, and the market is strong.

No. 1 Coltness, f.o.b. Glasgow	52/
No. 1 Summerlee, " "	51/
No. 1 Gartsherrie, " "	49/
No. 1 Langloan, " "	50/6
No. 1 Carnbroe, " "	44/
No. 1 Shotts, " at Leith	49/6
No. 1 Glengarnock, " Ardrossan	47/6
No. 1 Dalmellington, " "	43/6
No. 1 Eglinton, " "	42/
Steamer freights, Glasgow to New York, 4/	
Liverpool to New York, 10/.	

**Cleveland Pig.**—A large business has been done during the week, and the market is strong at 6d advance. No. 1 Middlesboro', G.M.B., 37/6; No. 3 ditto, 34/6.

**Bessemer Pig.**—Transactions more extensive in volume, with a further 6d advance in price obtained. West Coast brands, mixed numbers, 45/6, f.o.b. shipping point.

**Spiegeleisen.**—The demand has been fair, but sellers were unable to secure the advance asked last week. English 20¢ quoted 80/, f.o.b. N. W. England shipping point.

**Steel Rails.**—Prices are up a further 5/, and the market strong, with de-

mand brisk. Heavy sections quoted at £4. 10/, and light sections £4. 15/ @ £5, f.o.b. at N. W. England shipping point.

**Steel Blooms.**—Trade fair but at somewhat modified prices. We quote £3. 17/6 for 7 x 7, f.o.b. at N. W. England shipping point.

**Steel Billets.**—The demand continues free and prices are firm at a slight advance. Bessemer, 2½ x 2½ inch, £4. 5/, f.o.b. at N. W. England shipping point.

**Steel Slabs.**—Trade in this line rather slow and prices somewhat irregular. Bessemer, £3. 17/6, f.o.b. at N. W. England shipping point.

**Old Rails.**—Demand continues rather slow and prices are nominal. Tees quoted at £3. 5/ @ £3. 6/, and Double Heads, £3. 8/ @ £3. 10/, c.i.f., New York.

**Scrap Iron.**—There is a fair business and prices are steady. Heavy Wrought quoted at £2. 2/6 @ £2. 7/6, f.o.b.

**Crop Ends.**—The dealings are fair and at about former prices. Bessemer quoted £2. 10/ @ £2. 12/6, f.o.b.

**Tin Plate.**—Trade has been slow, and prices are barely steady. We quote, f.o.b. Liverpool:

IC Charcoal, Allaway grade	15/3 @ 15/6
IC Bessemer Steel, Coke finish	@ 11/6
IC Siemens " "	@ 13/9
IC Coke, B. V. grade	13/ @ 13/3
Charcoal Terne, Dean grade	12/ @ 12/6

**Manufactured Iron.**—There is still a good business in most lines and prices remain very steady. We quote, f.o.b. Liverpool:

Staff. Ord. Marked Bars	£ s. d. @ £ s. d.
" Common	@ 8 2 6 @ 5 15 0
Staff. Bk Sheet, singles	7 12 6 @
Welsh Bars (f.o.b. Wales)	5 2 6 @ 5 5 0

**Tin.**—The market irregular and unsettled, with trading active. Straits quoted to-day at £94. 15/, spot, and £95. 5/ @ £95. 10/ for three months' futures.

**Copper.**—Very slow trading and prices difficult to quote. To-day's prices are: Chili Bars, £77. 10/ for spot, and £70 @ £75 for futures. Best Selected, wholly nominal.

**Lead.**—A moderate business at steady prices. Quoted at £12. 15/ for Soft Spanish.

**Spelter.**—The demand moderate and prices about steady. Quoted at £17. 15/ for ordinary Silesian.

## Foreign Markets.

### EQUIVALENTS

Franc, Peseta or Lira	100	Cents.
Florin (Netherlands)	100	10.2
Florin (Austria)	100	35.9
Wirels (Portugal)	100	1.08
Wirels (Brazil)	100	54.6
Mark (Germany)	100	23.8
Gram	100	2.206
Picul	100	134.

### EAST INDIES.

SINGAPORE, December 30, 1888.—**Tin.**—Our last report was dated December 17, since when the volume of business has been less than usual. Tin has kept very steady at about \$37 per picul, but closes at \$37.25, and supplies are still restricted by heavy floods, otherwise we should have had a large production to deal with. **Gum Copal** is in moderate request and supply at steady prices at \$11 and downward. **Gum Damar.**—No good quality has been offered for sale. **Tonnage.**—Sailing vessel rates have been fairly maintained, while there has been some decline in steam freights to England. There is nothing offering for New York via Canal; the Norwegian bark Norway has been fixed via Cape for New York, while the Antioch and Penobscott are still loading for Boston. Ex-

change is firm at  $3\frac{1}{2}$  ¢ dollar for 6 months' sight credits. On the 24th inst. the steamer Benoune took for New York from here 3396 piculs of Tin.—*Gilfillan, Wood & Co.*

**MANILA, February 4, 1889.—Hemp.**—There are buyers at \$16.25 ¢ picul, against \$9 same time last year, equaling 9 ton, cost and freight, £55. 3/6, as compared with £32. 2/6 in 1888; there have cleared for the United States since last cable none, against 4000 bales last year; since January 1, 36,000, against 17,000; loading for do., 45,000, against 3000; cleared for England since January 1, 20,000, against 21,000; loading for do., 17,000, against 2000; cleared for all other ports, 2000, against 2000; receipts at all ports since last cable, 13,000, against 15,000; since January 1, 60,000, against 49,000 in 1888 and 41,000 in 1887. *Freight.*—\$7.50, against \$5.50. *Exchange.*—6 months' sight  $3\frac{1}{8}\%$ , against  $3\frac{1}{8}\%$ .—*Ker & Co., per cable direct, through Mr. Charles Nordhaus, 89 Water street, New York.*

**SINGAPORE, February 8, 1889.—Tin.**—There have been shipped during January from the Straits Settlements to the United States 550 tons, against 400 last year; to England, 1200, against 3500.—*Gilfillan, Wood & Co.*

#### BELGIUM.

**BRUSSELS, February 2, 1889.—Iron.**—As had been foreseen, the associated rolling mills have resolved to raise the price of Merchant and Sheets 50 centimes ¢ 100 kg. The present price fixed by the syndicate is consequently 12 francs ¢ 100 kg. for No. 1, for export, and 12.50 for home consumption, while Sheets No. 2 are 15.50 for both export and home use. Pig Iron is extremely scarce. Athus sold 42,800 tons, to be delivered during the second quarter, at 4.70. This is all his capacity will allow him to turn out. As for Beams, a good current of trade still exists, orders flowing in a steady stream despite the active competition that comes to us from the north of France. The latter have even beaten our makers in the shape of some contracts they made for low quality Beams, f.o.b. at Antwerp at 11.25. They cannot, however, compete with our makers as advantageously in quality next to the lowest, so that frequently they share the execution of third quality Beam orders with our own makers. In this manner the latter bought, f.o.b. at Antwerp, from 12 francs to 12 francs 12½. The Dyle-Bacalan Car Works received an order from Holland of 450 cars, but was unable to secure another order for five bridges for Tava, for which Dutch builders got the preference. It is now a positive fact that the cupolas for the Meuse forts will be built by foreign concerns, such as the Gursen, of Magdeburg; the Creusot, the Saint-Chamond, Châtillon and Commentry, but some of our Belgian works participate therein on joint account.—*Moniteur des Intérêts Matériels.*

#### SPAIN.

**BILBAO, January 26, 1889.—Pig Iron.**—The amount of Pig Iron turned out in our immediate vicinity aggregated last year 135,200 tons, distributed as follows:

##### Sold for Domestic Use.

Altos-Hornos.....	Tons. 8,500
San Francisco (Mudela).....	14,800
La Sociedad Vizcaya.....	26,600

##### Sold for Export.

Altos-Hornos.....	Tons. 13,400
San Francisco.....	25,300
La Sociedad Vizcaya.....	47,300

The Sociedad Vizcaya is the youngest of the three.—*Bilbao Marítimo y Comercial.*

#### GERMANY.

**HAMBURG, February 2, 1889.—Iron.**—The Rhenish-Westphalian Iron market has maintained its firmness. Pig Iron has been even more active. This may be said with reference to Spiegel in particular, makers now declining to sell any further amounts deliverable during the second quarter at 59 marks. There has been an uninterrupted but slow upward movement in Forge Pig, which is now  $1\frac{1}{2}$  marks higher than it was a week ago, the range now being 51.50 @ 53 marks ¢ ton, while at Siegen no more can be got at 50. Thomas has been active at 46, Bessemer at 55. Foundry Pig was also better, the range being from 54 to 61; Luxembourg may be quoted 34.50 @ 42 as a range as to quality. English Bessemer is worth 45/-. Boiler Plates have advanced 5 marks, and other rolling mill products in proportion. The Wire branch revives comparatively slowly; machine shops and carworks continue doing well, the latter in particular, 12,000 freight and passenger cars having just been ordered for the domestic railways. We quote Wire Rods 106 @ 108, Steel Rails 120 @ 130, and ditto for mines 110 @ 115. Metals are steady and unaltered.—*Borsenhalle.*

#### The Stove Association.

From the address of George H. Barbour, president of the National Stove Association, we call the following:

*Gentlemen.*—Another year has passed and we again assemble together for a friendly interchange of opinions and to discuss measures for the general improvement of our business. While it would afford me a great deal of pleasure to be able to say to you that the business at large was upon a substantial and profitable basis, I regret to say that at no time since the organization of this association was there more need of association in the true sense of the term, nor was there ever a time when it seemed so imperative that we should reason together for the purpose of trying to eliminate the evils which have gradually crept into the business, and to endeavor in some way to lay out such plans for the future as will insure fair interest upon the capital invested.

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## Hardware.

There is a fair amount of business doing, but orders are generally limited to moderate lots to meet the early requirements of the purchasers. Stocks throughout the country are generally light, but while there are good prospects for the season's trade buyers are disposed to be conservative in placing their orders. Prices in most lines are unchanged, and are in many instances so low that a good demand would soon result in strengthening the market and perhaps cause some advances.

### Barb Wire.

The market in this city presents no new features. Local prices are pretty well maintained, but the transactions are quite limited. The New York quotations remain: Carload lots, 3.6 cents; 3-ton lots, 3.7 cents, and smaller lots, 3.9 cents.

### Wire Nails.

Prices of Wire Nails are pretty steady at the low figures ruling, but in some cases current quotations have been slightly shaded. The volume of business is good. We still quote carload lots at factory, \$2.30; smaller lots at store \$2.50 to \$2.60.

### Miscellaneous Prices.

The Globe Nail Company, Boston, Mass., are making a new hot forged Horse Nail, which they brand Boston. It is sold from the following list, which is subject to a discount of 20 and 24 per cent:

No.	5	6	7	8	9	10	11
	\$0.26	.23	.21	.20	.19	.18	.17

They issue circulars describing this Nail, in which they call attention to its merit, another circular being devoted to their Globe Nail.

Nason Mfg. Company, 71 Beekman street, New York, have issued under date February 5 a discount sheet applying to their illustrated catalogue No. 86, with subsequent revisions. It opens with the following discounts, which are followed by prices on a large variety of goods:

	Discount.
Lap-Welded American Charcoal Iron Boiler Tubes.....	50 %
Wrought-Iron Pipe, On list prices as revised 23d March, 1887: Plain 1½ inch and under, whole lengths.....	57½ %
Plain 1½ inch and over, whole lengths.....	67½ %
Galvanized 1½ inch and under, whole lengths.....	45½ %
Galvanized 1½ inch and over, whole lengths.....	52½ %
When cut to order, advance 5 % on discount, and labor cutting charged extra.	
Extra and Double Extra Heavy W. I. Pipe:	
Plain 1½ inch and under, whole lengths.....	55 %
Plain 1½ inch and over, whole lengths.....	65 %
When cut to order, advance 10 % on discount, and cutting extra.	
Iron Hydraulic Pipe.....	Net.
Heavy Drive Well Pump.....	Net.
Light Galvanized Leader Pipe.....	50 %
Galvanized Adjustable Elbows.....	10 %
Spiral Riveted Pressure Pipe.....	50 %
Fittings for Spiral Riveted Pipe.....	20 %
Cast Iron Drain Water and Smoke Pipe.....	60 %
Cast Iron Water and Gas Pipe.....	Market rates.
Lead Pipe, 6 cents per pound.....	Net.
Cast Iron Fittings.....	70 & 10 %
Bushings and Plugs.....	75 & 10 %
Cast Iron Flanges.....	70 & 10 %
Branch Tees, Hook and Expansion Plates.....	67½ %
Malleable Iron Bushings.....	75 & 10 %
Malleable Iron Unions.....	67½ %
American Unions.....	45 %
Wrought Iron Fittings.....	45 %
Quarter Bends and Long Screws.....	67½ %
W. I. Couplings and Nipples, list prices revised on January 20, 1887.....	67½ %
Cock Wrenches.....	60 %
Gas-Pipe Hooks, Wrought Iron.....	Net.
Ceiling and Floor Plates.....	67½ %
Blake's Adjustable Pipe Hangers.....	30 %
Malleable Iron Fittings.....	35 %

The manufacturers of Common Carriage Bolts have united in announcing a reduction in the price of the goods, the discount

being made 75 and 10 and 2 per cent., with the deliveries and the discounts on quantities unchanged.

For some time Copper Rivets and Burrs have been selling at lower prices than were justified by the cost of the raw material, but the manufacturers have taken a step toward the correction of this unsatisfactory condition of things by making a decided advance in the prices of the goods, the discount on which to the general trade is made 50 per cent.

The manufacturers of Steel Traps on the 5th inst. advanced the list of No. 1 Traps, without chain, to \$3.75 per dozen, and with chain to \$5 per dozen. This, it will be observed, is an advance of 25 cents on the list. No change has been made in the discount.

### The Jobbing Trade.

Referring to the disposition of the jobbers to handle, as a rule, goods that are well known, and also to disregard to a certain extent quality under inducements of price, a New England manufacturer writes:

As far as our experience goes with jobbers versus retailers, we have found that jobbers invariably have sought the lowest prices without regard to quality, and this has prevented their customers from being offered goods they would have preferred had they been able to buy in such quantities as they needed. I have more than once been told by the buyers of large jobbing houses, "We don't care whether the goods are good for anything or not, only make the price low enough and we will give you all our trade. Our orders are mostly mail orders, and if we send them something that looks like a Plane it is all we care, if the price is low enough." Such a course compels manufacturers to make inferior goods, or else do all they can to deal with the retailers direct, who have some interest to keep the best articles.

The following letter, from a well-known Pennsylvania manufacturing concern, relates to their experience in trade and to the advantages of having their transactions largely with the jobbers:

The proportions of orders from retail dealers is, and has been for some time, on the increase, but we have not the remotest idea that we will ever do without the jobber, or ever want to do so. The higher prices paid by the smaller trade are an inducement in those days of small profits, but, on the other hand, where goods are going to the jobber they are mostly packed as fast as made and do not go to bins or shelves. Again, we are far more troubled in the smaller dealers' orders by changes demanded from our regular patterns and by difference in terms by which sizes, styles, &c., are designated. The jobber often acts as a modifier of these demands, as he does not multiply his sizes, &c., any more than necessary. However, this disposition on the part of the jobber keeps him from introducing new goods for us. We want all the trade we can get from jobbers and retailers, but we believe that the manufacturer will best serve his own interests by making a fair distinction between the prices to them. We ought to have said that the increase in our orders from the smaller dealers comes generally from a radius of 200 miles. Outside of this our trade throughout the United States is almost exclusively held by the jobbers.

### Items.

The Michigan commercial travelers formed an organization, at Lansing, on the 9th inst., to be known as the Knights of the Grip, and formally withdrew from the National Travelers' Protective Association. Their object is to secure legislation to more fully protect their rights; to secure as favorable rates from the railroads on baggage as other classes of travelers; to secure better hotel accommodations, and to adjust differences between hotel men and members; to elevate the social and moral character of the profession, and to assist in procuring employment for its members. The officers are: President, Albert F. Peake, of Jackson; secretary, L. M. Mills, of Grand Rapids; treasurer, George C. Cooper, of Lansing; sergeant-at-arms, E. L. Bennett, of Lansing; chaplain, the Rev. Charles Fluhrer, of Grand

Rapids; board of directors, L. J. Foster, of Detroit; A. A. Howard, of Coldwater; George F. Owen, of Grand Rapids; W. J. Richards, of Union City; Charles A. Ballard, of Lansing, with a vice-president from each Congressional district. Standing committees were appointed on railroad transportation, legislation, bus and baggage, hotels, relief, employment and the press.

Henry Disston & Sons have sold their Chicago building, having received a handsome offer from other parties, and have purchased a lot 102 feet by 22 feet on the corner of Washington and Jefferson streets, in that city, on which they will erect, under the supervision of H. D. Nicholls, their business manager, a substantial and elegant building, expressly adapted to their purposes.

Freeman Wire Company, St. Louis, Mo., issue a four-page leaflet relating to their Wagon department and showing some of the patterns of Express and other Toy Wagons which they are manufacturing.

Ideal Mfg. Company, Detroit, Mich., issue a circular relating to the Ideal Revolving Lawn and Garden Sprinkler, and the Ideal Favorite and Jewel and the Cyclone Hose Reels and Trucks. These different goods are illustrated and the list prices given.

The Wire Goods Company, of Worcester, Mass., have bought out the plant of the Burditt & North Automatic Blind Fixture Company, together with the various patents and rights pertaining thereto. They will move the business to Worcester and engage in it upon a considerably enlarged scale, and will add it to their already quite extensive line of Hardware. They will be ready to supply the trade for the coming season from their factories at Worcester, Mass.

Fowler & Sons, Buffalo, N. Y., in the recent fire lost their entire stock of Carriage Goods, Woodwork and Heavy Hardware. Their Iron and Steel business, however, being separated from their store, was not affected by the fire, and they are now doing business from that office as usual, and solicit the patronage of their customers and friends for Iron and Steel, of which they have a most complete stock. Their insurance is \$125,000, their loss being put at \$150,000. Their Bolt works at Anderson, Ind., are not affected and continue as usual, so that they are in a position to furnish Common Carriage and Machine Bolts, Lag Screws, Bolt Ends, &c., for which they invite inquiries.

Instead of putting their Steel Tapes on the market nickel plated, as originally intended, the Lufkin Rule Company, Cleveland, Ohio, are making them in solid German silver cases, which are referred to as better wearing than the nickel, an improvement which has been made without advance in price, though involving increased cost.

The trade will observe in the advertisement of Jenkins & Timby, Oswego, N. Y., the illustration which is given of Timby's Burglar-Proof Sash Lock and Ventilator. The points made in regard to it are: The security of the fastening, the ventilation secured by it and its automatic action. We shall have occasion to refer to it again.

The Baker Chain and Wagon Iron Mfg. Company, Allegheny, Pa., report their Wagon Hardware and special Forging departments as very busy, their orders for Baker Single Trace Clips, &c., being heavier than ever before.

The American Mfg. Company, Philadelphia, Pa., for whom the Lloyd & Supplee Hardware Company, Philadelphia, Pa., are agents, have purchased from the

estate of the Heaton & Denckla Hardware Company their interest in the France's Shutter Holder, together with the patents on the same. They will at once arrange for the manufacture of it.

Childs & Jones, Utica, N. Y., issue a price list devoted to Creamery and Dairy Apparatus and Supplies, in which a large variety of these goods is represented.

Studebaker Bros. Mfg. Company, South Bend, Ind., issue on separate sheets the revised price list of their Wrought-Steel Skein and the standard price-list of the S. B. Trade Cast-Steel Thimble Skein, of both of which goods illustrations are given with reference to their special features.

The Ridgway Refrigerator Mfg. Company, 813 and 815 Arch street, Philadelphia, Pa., issue as a supplement to their 1889 catalogue a sheet relating to Refrigerators illustrated in it. They are referred to as a correct combination of a Sideboard and a Refrigerator. The ice-tank slides over the box-lock and drawer, and rests on an iron support. With this construction, if desired, the tank can be taken entirely out and carried to any convenient place to receive the ice, thus doing away with the carrying of dripping ice through the house, or having the carpet soiled by the iceman. The top of the Sideboard is one solid piece without lids, and can be permanently used, as nothing need be removed from the top in order to insert the ice. The drinking water is obtained by means of a disguised spigot. In conjunction with the above features the box is so constructed that a thorough circulation of air passes entirely around the ice-tank. Several attractive patterns are represented, with description and list prices.

The open winter has had a somewhat injurious effect upon the demand for Chain, especially the fancy Chains, but an improvement is observable in the demand for Ship Cables.

Nelson Stelle, formerly Chicago manager for the Union Mfg. Company, of New Britain, Conn., has succeeded F. Gustorf in the firm of H. C. Maley & Co. The style of the firm has been changed to Stelle-Maley Company, incorporated on the 1st inst. Their business as manufacturers' agents will be carried on at the same place, 37 Franklin street. Mr. Stelle has been identified with the Hardware business for nearly 20 years, and is well known to the trade in the West and Northwest. The firm will represent the following firms in the territory tributary to Chicago, including the trade along the Mississippi and Missouri rivers and the Northwest:

E. R. Sexton, Buffalo, Braces.  
Lansing Wheelbarrow Company.  
J. H. Hoague, Chicopee, Mass., Chamfer Gauges, Tracing-Wheels and Spring Drills.  
Wm. J. H. Gluck, Baltimore, Stamped and Japanned Ware.  
S. P. Jennings, New Castle, Ind., Handles.  
J. L. Wosting, Cast Shears and Snips.  
Rock Island Knife and Shear Company, Cutlery.  
Chester Mfg. Company, Chester, Conn., Auger Bits.  
Empire Saw Company, Port Jervis, N. Y.  
M. S. Brooks & Sons, Chester, Conn., Bright Wire Goods.  
Keokuk Novelty Company, Sure Shut Spring Hinges.

In addition to the above goods the firm will handle their own manufactures in the line of Escutcheons, Carpet Stretchers, Handles and Family Soldering Irons.

The Maine Mfg. Company, Fairfield, Me., issue an attractive and well-printed catalogue showing their line of Refrigerators, and also Cotton's Patent Lawn Settees, Folding Camp Chairs, Folding Tables, Lapboards and Rockers. As a leading line special attention is called to the Refrigerators, and the following points are

made in regard to them: That no wood is exposed in the interior; that they are zinc-lined throughout; that the cold dry air circulation secures positive dryness; that they have large doors, giving easy access to the interior; and that the floors are flush with the door sills, making them easy to clean. The ice racks are made of galvanized iron and the ice chambers are of extra size. Illustrations are given of the different patterns, with list prices.

George Wheeler, representing John Chatillon & Sons, manufacturers of Scales and Butchers' Tools, 85 to 89 Cliff street, New York, spent some time recently in Chicago and vicinity, and met with gratifying success in taking orders for the specialties of the firm.

Edwin R. Procter, Gibson House, Cincinnati, has devised an ingenious return envelope, which appears to be well suited for use by business men who find it necessary to distribute circulars. It consists of an envelope with the flap lengthened to almost twice the size of the envelope. The back of the flap thus provides room for the printing of a circular. On the front of flap can be printed the address of the sender. For mailing, the flap is folded in two creases and thrust down into the envelope. It then looks like an envelope with a circular enclosed and the flap turned in according to the usual method. The end of the flap is visible in the V-shaped opening of the envelope, with the words printed, "Pull me out." The receiver of the envelope pulls out the flap, reads the circular, writes a reply on it if he desires, and turns the flap over so as to bring the printed address of the sender outside, wets a gummed end and fastens it down, thus making a sealed letter, and returns it to the mails. The inventor publishes a very interesting circular describing a great variety of uses to which this combined envelope, letter sheet and return envelope can be put.

The Standard Fibre-Ware Company, of Mankato, Minn., have established a branch office at 105 Lake street, Chicago, under the management of O. L. Baskin, who will carry a full stock from which direct shipments can be made. The company manufacture plain and decorated Pails, Wash-Basins, &c., from flax fiber. They have issued a variety of illustrated circulars, and are distributing a calendar of artistic design.

The Haardt Enameled-Ware Company, importers and manufacturers of Vienna enameled kitchen utensils and specialties, have established an office at 105 Lake street, Chicago, under the management of Franz Koelling. They issue an illustrated catalogue and price list of their goods comprising 28 pages. This ware is furnished in blue and white, brown and white or all white at the same price. Banded articles are furnished with blue or gold bands at 20 per cent. advance on the list price. Green and red bands are furnished on application. Marbled or veined articles are furnished in light blue, light green, light brown, dark blue and pike gray at 20 per cent. advance on the list price. Fancy hand-painted articles are supplied at 50 per cent. advance on the list. A full stock will be carried.

One of the papers of Springfield, Ohio, has an article referring to the manufactures of the city and the prominent place it occupies in the production of Farm Implements. It is suggested that a syndicate of Springfield manufacturers be formed, who should open a general shipping office in New York and receiving offices in the prominent ports of South America and Europe, with a view to cultivating on a large scale export trade in the large line of Farm Implements manufactured in that city. Reference is also made to the ac-

tivities in the different manufacturing establishments, showing their growth and enterprise.

We are advised that the firms of J. H. King, King & Barlow, Geo. H. Barlow and Brigham & Follett, Cory, Pa., are no longer in existence, but that Barlow Brigham & Follett, Limited, succeed them.

The American Screen Company, Brookline, Mass., issue a circular in which they call attention to some of the advantages of the American Flexible Metallic Frame Sliding-Wire Window Screen, alluding also to late improvements of steel or brass slides and metallic handles. The company also make Screen Doors of 1½ stock in either pine or hard woods.

Geo. K. Oyler, St. Louis, Mo., issues a catalogue devoted to the Plow Coulters, Blades and Hubs of which he is manufacturer, giving illustrations of the different patterns, and calling attention to the special features of the goods. It is accompanied by a sheet of prices to the trade.

The catalogue of Mast, Foos & Co., Springfield, Ohio, is devoted to their Buckeye Force-Pumps, Iron Turbine Wind Engines, Iron Fence, Buckeye Senior and Junior Lawn Mowers, &c. In addition to the illustration of the goods, it contains a number of pictures representing their use, with such subjects as "A Country Seat on the Delaware," "Scene in Portugal," "A Characteristic Scene on the Texas Rancho," &c.

Simmons Hardware Company, St. Louis, Mo., issue the "Keen Klipper Herald," which is devoted to lawns, with full descriptions of their Keen Klipper Lawn Mower, the construction and merits of which are alluded to at length. Directions are also given as to how to make a lawn, with other miscellaneous reading matter.

Peters Cartridge Company, Cincinnati, Ohio, have issued their catalogue for 1889, in which, besides illustrating their Cartridges, giving list prices, &c., they present a number of certificates from sportsmen in regard to the excellence of the goods. As relating to a standard line which has made a place for itself in the trade the catalogue is of interest.

May & Co., St. Louis, Mo., call attention in a circular to May's Boiler Compound, which is referred to as removing from boilers all scale of whatever formation, whether deposited from salt or fresh water, and also preventing the deposit of scale by holding the mineral properties of water in solution and preventing foaming and fermentation. It is alluded to as entirely free from acid, having no injurious effect upon the boiler, being easily applied, and securing a saving of power, water, fuel, expense and labor.

Simmons Hardware Company, St. Louis, Mo., illustrate in a circular the Rysdick and the Princeton Armless Road Carts. In calling attention to the former they allude to it as new in principle, symmetrical in appearance, strong and durable in construction, and call special attention to the fact that the weight is thrown altogether on the axle by the use of the Thomas Coil Spring.

J. W. Garratt & Co., St. Louis, Mo., manufacturers of Church, Fire Alarm, Tower, Clock, School, Factory, Depot, Ranch, Ship, Steamboat, Locomotive and other Bells and Gongs, issue a catalogue in which their line of goods is illustrated. The front is attractively printed in bronze, with a representation of the famous Liberty Bell in Philadelphia.

Western Block Company, Lockport, N. Y., is composed of five members who for a number of years have been in the employ



of the Penfield Block Company and Boston and Lockport Block Company. They commenced manufacturing about December 1 and are now in full operation. They run by water power, the excellence of which is referred to, and have a steam plant ready to use in case of accident to water-wheel or connections. They are confining their attention to the manufacture of all kinds of Wood and Wrought-Iron Tackle Blocks and Iron and Lignum-Vitæ Sheaves.

### Keeping Account of Stock.

A correspondent of *The Metal Worker* writes to that paper as follows:

I wish to get the idea of the Editor or of the readers of *The Metal Worker* concerning a simple plan of stock-keeping. It should be adapted to the requirements of a retail store, where the goods are numerous and varied. In such cases some items are being exhausted daily, piece by piece, until finally it is discovered that you are out of a certain article unawares. It always happens that there is a demand for just that thing at that time, apparently because you have not got it in stock. Now, a simple plan of keeping account of stock going in and out, it seems to me, would be a barometer to the retailer, valuable both as indicating his wants in the line of stock and the amount of stock on hand. It certainly would be of great value if kept correctly. It is often the case that the retailer in ordering goods goes by guesswork, and thereby orders duplicates of what he has already in stock, and omits much that he is actually in need of, or it occurs that he does not order in proportion to the demand that exists for certain goods. Then there follows the expense of telegraphing, express charges, &c., all of which add to the cost of doing business. A plan of stock-keeping, it seems to me, could be inaugurated which would avoid all this, and, in addition, would pay for the labor spent upon it. It seems to me that stock-keeping should be one of the cardinal features of a well-arranged and well-managed retail store.

In reply the Editor of *The Metal Worker* says:

Our correspondent presents a narrative of experience which is parallel to that of many of our readers. The annoyance of being out of articles, or of having a duplicate lot come in, resulting in a surplus of stock, is experienced more or less by every retailer. Various plans are resorted to for avoiding this, but we doubt if any one has discovered just what will answer the purpose in all cases. We presume that all our readers are open to suggestions on this point, and, therefore, think a discussion of methods can be secured which will be very generally acceptable. In some stores that we know of what is called a "tickler," or reminder, is hung up conspicuously in the office, upon which each clerk or salesman is required from day to day to make memorandum of the goods which he thinks are needed, including the goods which are to be in special demand, and an account of those the stock of which is becoming low. This tickler, or reminder, is variously managed, and is sometimes kept in the form of a book and in other cases it is a slate or a sheet of paper fastened against the wall.

Our correspondent's suggestion, based, as is evidenced by his remarks, upon considerable thought upon the subject, is radical in the extreme. His idea is to have some plan of accounting which shall show what goods are in stock, what is going out and what is coming in. This is a comparatively easy thing to do where the number of articles is small and where the articles are not large. But when it comes to the vast line of goods carried by retail hardware stores the difficulty of managing

such an account satisfactorily becomes apparent. And yet large concerns, handling enormous stocks, virtually do the thing which our correspondent outlines. Take any of the large retail dry goods establishments for example. The business is conducted every day in the year except Sundays and holidays, and it would be impossible to stop to inventory in all departments the goods on hand to make up the profit account. Good accounting steps in and does all this for the retailer. By the system of accounting employed the buyer knows just what is wanted, and in the same way the goods on hand are always shown by the account, rather than as the result of invoicing. In business we are very apt to take good care of cash. We keep an account with cash, debiting it with what we receive and crediting it with what we pay out. From time to time the balance on hand is counted, not, as many might at first suppose, to show what we have on hand, but rather to prove the accuracy of the account which shows what we have on hand. When it comes to merchandise, however, we abandon all accounting in the sense of the cash account, and we buy and sell and go through a long term of months and then take account of stock, see what we have on hand, and thereby determine what we have made or lost. Now, it would seem that good accounting should take care of property whatever may be its shape just as it takes care of cash. We leave these ideas for the consideration of our readers and hope that some discussion will follow.

### Arrangement of Stores.

The accompanying illustration, Fig. 307, represents a Sled rack, for a description of which we are indebted to Elsworth & Dudley, Poughkeepsie, N. Y. It occu-

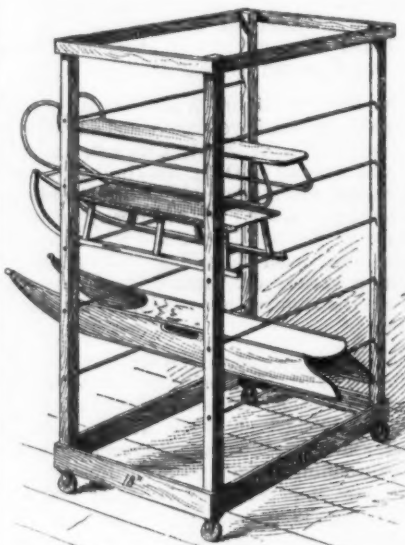


Fig. 307.—Sled Rack.

pies a space on the floor 18 x 30 inches, and is referred to as economical of room and accommodating the goods in such a manner as to secure an attractive display, while they are at the same time convenient of access. The bars on which the Sleds rest are made of  $\frac{3}{4}$ -inch round iron.

### Exports.

PER BARK ILIA, JANUARY 20, 1889, FOR CAPE TOWN, SOUTH AFRICA.

By Des Brisay & Allen.—61 Plows.  
By Coombs, Crosby & Eddy.—90 dozen Axle Grease, 1 dozen Meat Cutters, 12 dozen Hatchets, 2 dozen Tools, 2500 Spokes.  
By H. W. Peabody & Co.—2 cases Hardware.  
By R. W. Forbes & Son.—11 cases Hardware, 4 gross Axle Grease, 1 package Stamped Ware, 6 dozen Mouse Traps, 1 case Lawn Sprinklers, 15 dozen Brooms, 13 dozen Axes,

$\frac{1}{2}$  gross Shade Rollers, 15 dozen Handles, 47 packages Agricultural Implements, 8 packages Agricultural Implements.

By W. B. Fox & Bro.—1 case Hardware, 2 cases Brooms, 1400 pounds Axle Grease, 1 case Handles, 2000 Handles.

By W. H. Crossman & Bro.—4 gross Shade Rollers, 50 dozen Brooms.

By John Norton & Sons.—12 $\frac{1}{2}$  gross Axle Grease, 15 Ranges, 1 case Fixtures.

By Arkell & Douglas.—1 case Pulleys, 1 case Carriage-Ware, 2 gross Axle Grease, 2 cases Braces and Bits,  $\frac{1}{4}$  dozen Lawn Sprinklers, 10 Stoves, 6 dozen Door Springs,  $\frac{1}{2}$  dozen Step-Ladders, 500 Broom Handles,  $\frac{1}{2}$  dozen Scales, 1 dozen Ladders, 1 case Saws, 14 dozen Handles, 2 gross Shade Rollers, 5 dozen Traps, 6 cases Hardware, 1970 pounds Rope, 1 dozen Feed Cutters, 1 dozen Meat Cutters,  $\frac{1}{2}$  dozen Churns, 6 cases Hardware,  $\frac{1}{4}$  dozen Churns.

By Strong & Trowbridge.—1 case Handles, 16 cases Axes, 24 cases Axle Grease, 3 cases Brooms, 4 crates Churns, 2 cases Wire Goods, 2400 pieces Stoves.

PER SHIP ROBERT S. BESNARD, JANUARY 31, 1889, FOR SYDNEY, N. S. W.

By W. E. Peck.—31 Clocks, 4 reams Sandpaper, 9 packages Lamp Goods, 31 packages Hardware, 5 packages Plated-Ware, 3 dozen Planter's Hoes, 4 dozen Hay Forks, 7000 Cartridges, 5 Rifle and Tools, 1 case Lamps,  $\frac{1}{2}$  gross Mouse Traps, 2 cases Plated-Ware, 9 packages Lampware, 1 gross Can Openers, 20 Rifles, 2000 Cartridges, 1 case Primers and Tools, 31 Clocks, 1 dozen Meat Choppers, 22 packages Hardware, 2 cases Plated-Ware.

By Strong & Trowbridge.—33 cases Handles, 2 cases Firearms, 1 case Tools and Firearms, 2 cases Cartridges, 4 cases Hammers, 1 case Hardware, 2 cases Rifles, 6 pieces Lampware, 2 packages Pumps, 1 case Tools, 13 packages Barrow Parts, 1 case Brooms, 2 packages Whips, 3 packages Hardware, 1 case Carpet Sweepers, 1 case Door Checks, 1 case Padlocks, 1 case Lampware.

By R. W. Forbes & Son.—174 Packages Sewing Machines, 5 packages Sewing Machines and Parts, 1 box Generators, 1 package Hardware, 1 package Hardware, 2 boxes Stubble Cutters.

By H. W. Peabody & Co.—23 cases Steel.

By A. S. Lascelles & Co.—1 dozen Wringers.  
By F. Miller & Sons.—2 gross Blacking, 1 $\frac{1}{2}$  gross Blacking.

By Collins Company.—57 dozen Edge Tools.

By Meriden Britannia Company.—2 boxes Plated-Ware, 14 Packages Plated-Ware, 2 boxes Plated-Ware.

By W. K. Freeman.—2 crates Wheels, 12 bundles Whiffletrees.

By Woodhouse & Stortz.—1717 pounds Hardware, 18 dozen Axes.

By W. James.—23 cases Steel Carriage Springs and Parts.

By J. L. Mott Iron Works.—30 Stoves.

By Welsh & Lea.—6 cases Iron Bolts.

By Ansonia Clock Company.—5 boxes Clocks.

By Waterbury Clock Company.—21 cases Clocks, 5 cases Clocks, 3 cases Clocks.

By Russell & Erwin Mfg. Company.—21 cases Hardware.

By Edward Miller & Co.—37 packages Lamp Goods, 44 packages Lamp Goods, 81 packages Lamp Goods.

By V. Basanta.—114,000 Ammunition, 600 dozen Handles, 2 gross Whip Handles, 83 dozen Lamp Goods, 1 gross Barometers, 333 Clocks, 100 gross Paper Caps, 9 Perambulators, 10 dozen Washboards, 48 dozen Hammers, 18 dozen Wrenches, 9 dozen Oil Cans, 12 $\frac{1}{2}$  gross Axle Grease, 10 gross Blacking, 21 dozen Wrenches, 40 boxes Tacks, 3 dozen Money Drawers, 10 dozen Axes, 25 dozen Washboards, 111 pounds Washita Stones, 1 case Planes, 8 dozen Carriage Clamps, 5 $\frac{1}{2}$  dozen Ship Augers, 20 $\frac{1}{2}$  dozen Saws,  $\frac{1}{2}$  gross Egg Beaters, 12 sets Sad Irons, 4 dozen Axes, 15 $\frac{1}{2}$  dozen Potato Mashers, 2 gross Wood Spoons, 6 dozen Rolling Pins, 25 boxes Clothes Pins, 48 dozen Springs, 102 $\frac{1}{2}$  dozen Locks.

By Arkell & Douglas.—4 dozen Picks, 10 dozen Axes, 5000 Handles, 30 dozen Washboards, 2 crates Carriage-Ware, 4 cases Bolts,  $\frac{1}{4}$  dozen Corn Mills and Parts, 2 $\frac{1}{2}$  dozen Ladders, 4 boxes Lampware, 65 dozen Handled Axes, 25 dozen Axes, 25 packages Lamp Goods, 1 case Hardware, 2 $\frac{1}{2}$  dozen Guns, 3 dozen Tools, 150,000 Primers, 140 pounds Staples, 22 dozen Picks, 2 dozen Lamps, 5 Shellers, 14 cases Handles, 3 cases Bird Cages, 2 cases Skates, 12 dozen Traps, 5 cases Hardware, 2 gross Blacking, 2 dozen Picks, 6 dozen Axes, 3 crates Wheels, 1 crate Wheels, 2 boxes Castings, 5 cases Axes.

By Peters & Cathoun Company.—2 cases Saddlery.

By R. W. Cameron & Co.—60 dozen Axes, 20 dozen Tools, 81 dozen Axes, 2 cases Saws, 3 cases Ruling Machines, 4 packages Machinery, 1 case Skate Parts, 3 cases Skate Parts, 4 cases Roller Skates, 40 dozen Hatchets, 90

dozen Handles, 486 dozen Chimneys, 35 gross Wicks, 15,502 pieces Slate, 1600 pounds Saw-mill Machinery.

By E. W. Harrison.—18,000 pounds Iron Castings, 1100 feet Leather Belting, 60 packages Iron Machinery, 4000 pounds Nails, 1 box Miners' Lamps.

By H. S. Chipman.—2 cases Hardware.

By Healy & Earl.—9 boxes Sawmills, 1 box Emery-Wheels.

By Singer Mfg. Company.—1105 Sewing Machines.

By Bradley & Hubbard Mfg. Company.—44 packages Lamp Goods, 29 packages Lamp Goods.

By R. W. Cameron & Co.—200 sets Car Springs.

By F. B. Wheeler & Co.—5130 pounds School Slates, 50½ gross Axle Grease, 1 case Castings, 1 case Clocks.

By Coombs, Crosby & Eddy.—8 dozen Handles, 3 dozen Hammers, 2 dozen Hatchets, 35 dozen Blocks, 2 dozen Row Locks, 2 dozen Shovel Handles, 20 gross Shoe Polish, 86 Stoves, 3 dozen Wringers, 53 dozen Carpenters' Tools, 8 dozen Bird Cages, 21 dozen Hammers, 30 dozen Edge Tools, 42 Ladders, 21 Tables, 65 Velocipedes, 1 dozen Carpet Sweepers, 30 dozen House-Furnishing Goods, 9 gross Hardware, 10 dozen Carpenters' Tools, 1 dozen Rakes and Hoes, 1 dozen Churns, 24 dozen Tacks, 10 dozen Axes, 80 dozen Edge Tools, 30 dozen Axes, 12 gross Shade Rollers.

By Halsey, Doubleday & Co.—12 Carriage Tops, 62 Dashers, 60 dozen Couplings and Yokes, 6 dozen Fifth Wheels, 1 case Nails and Buttons, 4 1-6 dozen Castings, 12½ gross Axle Grease, 12½ gross Axle Grease, 5 gross Axle Grease, 224 pounds Glue, 112 pounds Glue, 6¼ gross Axle Grease, 8 dozen Paint Brushes, 250 boxes Clothes Pins, 150 dozen Axe Handles.

By McLean Bros. & Rigg.—36 dozen Skates, 150 dozen Lamp Chimneys, 3½ dozen Carpet Sweepers, 18 dozen Washboards, 44 dozen Veneer Seats, 2 gross Lemon Squeezers, 2 gross Oil Cans, 60 Lawn Sprinklers, 2 dozen Braces and Drills, 8 dozen Plumbs and Levels, 14 cases Agate-Ware, 4 dozen Meat Choppers, 24 dozen Hatchets, 2 dozen Broad Axes, 2 gross Mop Holders, 3½ dozen Seed Sowers, 25 dozen Axes, 30 dozen Mouse Traps, 18 dozen Hammers, 3 dozen Miter Boxes, 17 dozen Saws, 24 dozen Cow Bells, 2 gross Lemon Squeezers, 1 gross Nutmeg Graters, 12 dozen Stencils, 1 dozen Lemon Squeezers, 24 dozen Curry Combs, 6 dozen Axes, 24 Dozen Axes, 10,000 Clothes Pins, 54 dozen Axes.

By W. H. Crossman & Bro.—6 dozen Axes, 7 dozen Picks, 28 dozen Hatchets, 12 dozen Hammers, 19 dozen Hatchets, 2 cases Hardware, 22 dozen Axes, 57 pounds Nails, 78 Dashers, 16 cases Hardware, 6080 pounds Bolts, 40 Scales, 1000 Handles, 38 dozen Axes, 12 dozen Hatchets, 2 dozen Adzes, 1 gross Mop Handles, 60 Corn Mills, 3 gross Traps, 12 dozen Hatchets, 24 dozen Hoes, 20 dozen Axes, 199 packages Carriage-Ware, 18 sets Axes, 400 pairs Boller Skates, 31 dozen Axes, 6 cases Carpenters' Tools, 2000 feet Rubber Hose, 2 cases Pump Carts, 24 sets Rifle Tools, 3 gross Egg Beaters, 14 cases Hardware, 48 Rifles, 18 sets Tools, 100,000 Primers, 60,000 Cartridges, 32 dozen Axes, 1 gross Mop Handles, 12 dozen Bush Hooks, 6 dozen Hammers, 1056 pounds Nails, 10 dozen Axes, 24 dozen Handles, 3 cases Hardware, 6 dozen Thermometers, 6 dozen Handles, 5 dozen Tools.

PER SCHOONER JOHN F. KRANZ, FEBRUARY 3, 1889, FOR PORT ELIZABETH, SOUTH AFRICA.

By Coombs, Crosby & Eddy.—120 dozen Edge Tools, 36 dozen Handles, 1 Grain Mill, 2 Corn Mills, 3 Corn Shellers, 4 Churns, 2 Corn Shellers, 4 dozen Brackets, 5357 pounds Sisal Rope, 4 dozen Wheelbarrows, 10 dozen Hatchets, 20 dozen Shade Rollers, 3 Hay Cutters, 6 Corn Mills, 3 Scales, 54 dozen Handles, 5 dozen Saws, 1 dozen Ladders, 6 dozen Carpenters' Tools, 1 dozen Sprinklers, 4 Plows, 19 dozen Plow Parts, 1 Corn Sheller, 1 dozen Plow Parts, 4 Agricultural Implements, 2 Corn Shellers, 3500 pounds nails, 4 dozen Plow Parts, 43 dozen Hatchets, 6 Grindstones, 40 Plows.

By R. W. Forbes & Son.—40 dozen Pick Handles.

By New Home Sewing Machine Company.—150 Sewing Machines.

By J. Norton & Son.—5243 pounds Cordage, 3 Carriages.

By Arkell & Douglass.—6 Stoves, 9 packages Hardware, 7 cases Stuffers, 3000 Primers, 1 case Wire, 1 Forge, 4 dozen Lemon Squeezers, 14 dozen Axes, 30 gross Clothes Pins, 6 Sewing Machines, 17 cases Agricultural Implements, 1 dozen Handles, ¼ dozen Snaths, 2 cases Hoes, ½ dozen Scales, 3 cases Tools, 3 dozen Bench Screws, 1½ dozen Clocks, 6 Tobacco Cutters, 1 Washing Machine, 12 dozen Axes, 15 gross Clothes Pins, 264 pounds Sash Weights, 1 box Hardware, 5 pounds

Sash Cord, ¼ gross Shade Rollers, 9 cases Agricultural Implements, 3 packages Hardware, 15 kegs Nails, 5 dozen Axes, 12 dozen Handles, ½ dozen Corn Mills, 1 dozen Barrows, 6 dozen Picks, 13 Pump Levers, ½ dozen Grindstones, 1 dozen Grindstones, 30 dozen Picks, 12 kegs Nails, 10 Scales, 33 cases Slates, 1 case Lawn Mowers, 1 case Lamp Goods, 1¼ gross Fruit Jars, 11 dozen Hammers, 1 case Harness, 75 cases Axes, 55 kegs Nails, 54 packages Carriage-Ware.

By H. W. Peabody & Co.—5400 pounds Nails.

By W. H. Crossman & Bro.—6 dozen Handles, 1 barrel Blacking, 26 cases Plow Parts, 42 cases Slates, 4 gross Shade Rollers, 4 cases Sash Weights, 24 pounds Sash Cord, 15 kegs Nails, 9 Store Trucks.

By Corner Bros. & Co.—12 dozen Saws, 6 dozen Clocks, 9 dozen Ladders, 1 dozen Corn Shellers, 200 dozen Broom Handles, 16 Plows, 130 dozen Brooms.

PER BARK SERENE, FEBRUARY 5, 1889, FOR PORT NATAL, SOUTH AFRICA.

By Corner Bros. & Co.—20 cases Hardware, 6 Wagons, 78 cases Hardware, 158 cases Agricultural Implements, 22 Wagons.

By Marcial & Co.—40 dozen Picks, 4 boxes Hatchets, 2 dozen Spading Forks, 3 dozen Hoes.

By Coombs, Crosby & Eddy.—500 Broom Handles, 24 dozen Picks, 2 dozen Edge Tools, 195 pounds Oil Stones, 60 dozen Axes, 7 Ladders, 50 pairs Plow Handles, 5 dozen Carpenters' Tools.

By W. H. Crossman & Bro.—10 packages Hubs, 12 cases Spokes, 28 bundles Carriage-Ware, 5 cases Hardware, 4 dozen Axes, 2 cases Hardware, 3 dozen Plow Shares, 70 dozen Hatchets, 104 cases Plow Parts, 2 dozen Wringers.

By Woodhouse & Stortz.—18 packages Agricultural Implements, 6 packages Axes.

By H. A. Caesar & Co.—40 Axes, 112 Plows and Parts, 32 Plows and Parts.

By H. W. Peabody & Co.—3 cases Carriage Hardware, 8 cases Agricultural Implements, 8 cases Agricultural Implements, 748 pounds Nails, 2 cases Edge Tools, 228 dozen Handles, 3 cases Stone, 3 cases Brooms, 7 packages Carriages.

By Strong & Trowbridge.—1 case Brooms, 2 cases Clothes Pins.

### Our Export Methods.

A recent issue of the *Pittsburgh Chronicle* contains the following remarks by M. Morier, a native of France, who has been for many years a resident of Burmah, and is referred to as an extensive traveler and a keen observer. His comments on the American way of doing business are significant, and his suggestions worthy of consideration:

"While Americans are prone to boast of their manufactures," said he, "and rank them as readily superior to those of any other nation, it is painfully apparent, alike to manufacturer, statesman and traveler, that the excellence of American goods has not received proper appreciation away from home. The export trade is distressingly small when compared with the size of this country. The very nations that lie nearest, and which, for geographical reasons, if none other, should be the recipients of the surplus manufactures of the United States, draw the least upon this country for their surplus. Cuba, Mexico and Central America go to England and Belgium for their commodities rather than to the United States, which is not half so far. Brazil, too, and the South American republics satisfy their wants from the storehouses of another hemisphere. As for Africa and India, American trade in those localities is practically nil. American machinery and some articles of Hardware are exported to a limited extent, and are in demand in a few foreign markets, but textile fabrics and articles of domestic use made in the United States are rarely found in the markets of other nations. Even when sent there and exposed for sale they do not readily find purchasers. Cheap prints and calicoes find their way into Cuba and Hayti, and are worn by the poorer classes. But for the finer grade woolsens, cottons and silks there is absolutely no demand."

American manufacturers are lacking in enterprise. They must be willing to assume some risk if they want to effect an entrance into foreign markets. Let them study the tastes and needs of the people of other nations, manufacture a special line of goods for them, then put them on the market and be content to wait for the people to find out their worth. We can't expect a Zulu chief to buy a swallow-tail coat and patent leather pumps, no matter how fine may be their workmanship. We must cater to his taste. If he wants a scarlet ribbon and an assegai, there is no use in trying to tempt him with a fur-lined overcoat and a

gold-headed cane. If American manufacturers would but take the cue from England and France, and give the Cubans, the Brazilians and the Chileans something they really want, they would soon build up a flourishing trade.

When I first went to India France had but little foothold there. I determined to secure for her some amount of Burmese trade, and accordingly, during my two years' consulate, I made a close investigation of the people's tastes and whims. I studied their favorite colors with great minuteness, carefully noted the quality and form of their garments, and made clippings of every piece of goods that came to hand. I then sent detailed instructions to French manufacturers as to the exact nature of the goods they should produce. The silks were to be in pieces of 10 feet long and 1 broad, and the patterns and texture radically different from anything French looms had ever turned out. They took the hint and set to work. In a short time the importation of French silk into Burmah had gained enormous proportions.

This is but one instance from many. England, Germany and the Netherlands have employed the same methods in building up their trade. They delight the East Indians with the finest and gayest of silks, and find the Liberians and Senegambians equally eager for rough, coarse cotton. American manufacturers are still in the rear because they fail to study the people to whom they cater.

There are still other reasons for our lack of export trade. Americans have no proper means of transporting their goods to foreign countries. In the past century England has given \$250,000,000 to the support of her merchant marine, besides \$100,000,000 to private enterprises. Her vessels carry her products to every quarter of the earth, while Americans are totally lacking in such facilities. If Philadelphia should have lines of her own to Venezuela, Central America and other Southern countries, I believe there would be a very material increase of commerce.

Insufficient means of transportation is generally conceded to be a vital cause for the lack of American export trade, but every one who has studied the question agrees that Americans are too ready to pour old wine into new bottles, and that so long as they neglect to study the tastes of men of other nations they must continue to be shut out from foreign markets.

The charcoal furnace of the Ashland Iron and Steel Company, at Ashland, Wis., is now in good running order, and is fulfilling the expectations of its builders in exceeding the production of any other charcoal furnace in the world. The size of the stack is 65 feet by 12½ feet, and it is equipped with two Whitwell hot-blast stoves. Its output for the week ending February 2 was as follows:

	Tons.
January 27.....	89
January 28.....	86
January 29.....	90
January 30.....	90
January 31.....	100
February 1.....	95
February 2.....	92

Total for the week..... 642

The average daily product was thus nearly 92 tons. On the 5th inst. the production was still larger than on any day above recorded, running up to 104 tons. The owners expect to be able to keep up this remarkable work. M. R. Hunt is now general manager.

Charles A. Ashburner, mining engineer, of Pittsburgh, and also connected with the Fuel, Gas and Electric Engineering Company, Limited, of that city, has gone to Los Angeles, Cal., to examine gas and oil territory in that section owned by George Westinghouse, Jr., and also to examine certain copper mines in the West.

Messrs. Lodge, Davis & Co., manufacturers of iron and brass working machinery, Cincinnati, Ohio, will open March 1, at the corner of Lake and Canal, Chicago, Ill., a depot for the exhibition and sale of their improved engine lathes, shapers, drill presses, planers, milling machines, &c. They will have a full line of tools on hand and will sell them, free on board cars at Chicago, at factory prices. Mr. E. D. Goodwin, who has been connected with their home office for some time, will be in charge.



### The Perfection Padlocks.

The accompanying illustration represents the interior mechanism of the Perfection Padlocks, a line of cast bronzed goods put on the market by the Ames Sword Company, Chicopee, Mass. These locks are worked with a double-bitted key, Fig. 2, turning indefinitely both ways. They are made with eight levers, and from their construction are alluded to as not liable to get out of order or to be picked. It will be seen that the small tumbler holds the large one firmly in



Fig. 1.—The Perfection Padlock, Showing Mechanism.

place. When the key is inserted the first movement withdraws the small tumbler and sets the large one free, and, as the key continues to turn, the other side throws back the large tumbler and releases the shackle, which is thrown back by the spring. When the key is withdrawn and the shackle closed the large tumbler is pressed up first by its spring, and then the small one closes up under and holds it firmly. There are eight tumblers, thus

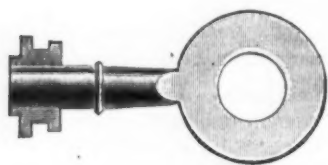


Fig. 2.—Key to Perfection Padlock.

admitting of a great many combinations. These padlocks are made 2½ inch plain, with spring drop staple and 10-inch chain, or with staple spring drop and 10-inch chain, as desired. Two keys are furnished to each lock.

### Proctor's Arctic Safety Bail.

The accompanying engraving illustrates a very simple yet effective device to be attached to cooking vessels in place of the usual wire bail, which is apt to get too hot to be touched with the bare hand. The safety bail is a flexible brass chain, made long enough to allow the lid of the vessel to be removed easily. The chain is passed through the ears of the vessel, and linked together to make it endless. In use when cooking the chain lies on the lid of the vessel and does not get hot, as a thick wire bail is very likely to do. The

dotted line in the cut shows the usual position of a wire bail "in the steam." If the cover of the vessel has a knob or tin strap, the cross strand of the chain engages it and prevents it from slipping off, so that the lid can be used as a strainer. The cover is tightly held, so that the solid

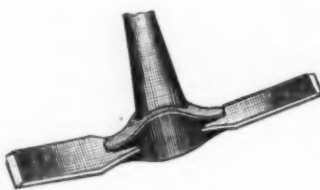


Proctor's Arctic Safety Bail.

contents cannot displace it and fall out. When thus used the safety bail throws the hand so far from the vessel that the heat from it cannot be felt. It is manufactured by Edwin R. Proctor, Gibson House, Cincinnati.

### Cronk's Garden Mattock.

This article is represented in the accompanying illustration. It is made by the Cronk Hanger Company, Elmira, N. Y. It is referred to as light, weighing only 1½ pounds, and manufactured of the best hoe steel, with malleable eye and XXX handles. It is recommended by them as



Cronk's Garden Mattock.

superior to a garden hoe for digging burdocks, weeding out and for use in nurseries.

The 6-inch steel gun cast at the Standard Steel Casting Company's works, at Thurlow, Pa., has been successfully tested at the Government proving grounds at Annapolis with 12 rounds, with the full charge of 48½ pounds of prismatic powder and a 100-pound projectile. In this gun the steel was made by the open-hearth process, while the one that burst a few weeks since at the first round was of Bessemer steel. It will require further tests to fully establish the superiority of either method of manufacture.

### New Wire Specialties.

The Van Wagoner & Williams Company, 82 Beekman street, New York, have recently added to their line the following wire specialties: Gem Wire Ceiling Hooks, Fig. 1.; Gem Wire Sash Lifts, Fig. 2.; and Gem Wire Door Pulls, Figs. 3 and 4. The ceiling hooks (Fig. 1) have, it will be

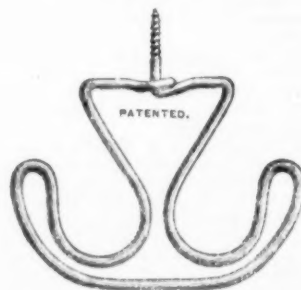


Fig. 1.—Gem Wire Ceiling Hook.

observed, braces on each side of the screw to keep the hook in position when clothes are hung on either side of it. These hooks will sustain a weight of 200 pounds and are referred to as very useful for ward-

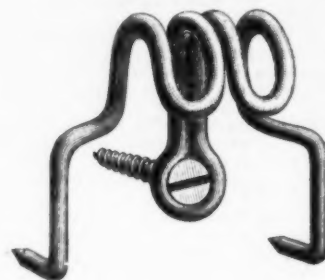


Fig. 2.—Gem Wire Sash Lift.

robes and closets. The wire sash lift shown in Fig. 2 is described as stronger and cheaper than cast iron, while, at the same time, it is more easily applied. These ceiling hooks and sash-fasts are furnished



Fig. 3.—Gem Wire Door Pull, to Drive.

coppered, walnut bronzed, nickel-plated or brass, as desired, and are packed one-half gross in a box, 12 gross in a case. Two patterns of screen-door pulls are represented in Figs. 3 and 4, one of which



Fig. 4.—Gem Wire Door Pull, to Screw and Drive.

is to drive in the wall; the other, Fig. 4, has one end driven in and the other fastened by a screw.

### The Improved Acme Wrench.

The Capitol Mfg. Company, Loomis and Taylor streets, Chicago, have recently made important changes in the construction of the Acme wrench, which is represented in the accompanying illustration. The steel entering into this tool is made specially for the company, and is warranted not to break, bend or spring with ordinary use. The head is drop-forged, and great strength is secured by the double slide. The long nut is alluded to as preventing "stripping" under the most severe strain, and the length of thread gives this wrench a greater capacity than the ordinary screw wrenches. The nut is hexagonal in form instead of circular. The changes which have been made in this wrench are the result of investigations among mechanics with reference to the weak points of wrenches, and the adoption of practical suggestions made by these masters of the bench. The confidence of the company in the excellence of these tools, and their belief that they will meet the most exacting requirements, are thus founded on a practical basis. These wrenches are made in all sizes, from

the sawdust is pushed out of the gullet, leaving it clear for the next stroke. The sharp chisel edge of the cutting teeth is referred to as leaving the sides of the wood as smooth as though planed, and, as little set is required, the saving of material is referred to as important, while the ab-

keep in order than others, as with the ordinary teeth it is necessary to file two teeth at a time, making it difficult to have them of exactly the same height, while in this pattern of saw it is explained that, after jointing, the clearing tooth is first filed  $\frac{1}{16}$  inch below the level of the cut-



New B. M. T. Saw.

sence of roughness and loose fibers lessens the friction, enabling the saw to work successfully with much less power than the V-tooth saw. With this construction it is claimed that the saw will cross-cut, rip or cut in a miter box with equal facility one-third faster than any saw now

being used, holding the file almost parallel with the blade of the saw and at a slight upward angle, thus clearing the point of the cutting teeth in front and falling below the bevel of the cutting teeth in back. After all the clearing teeth have been filed the cutting teeth are filed to a point one at a time, so that all can be brought to an exact level. When this is done an oilstone laid flat on the side of the saw and run up and down a few times will reduce, it is said, any irregularity in the set and give smooth cutting. The set is given by placing the tooth on a piece of flat steel with a slight bevel on the edge and striking it with the peen of a hammer in such a way as to set only the front or cutting edge, where in the ordinary saw the whole tooth is turned. The company have a special saw-set made for this purpose, which is referred to as doing its work exactly. The circular issued by the company gives a full description of this saw, and illustrates the manner in which it is filed, and the price list.



The Improved Acme Wrench.

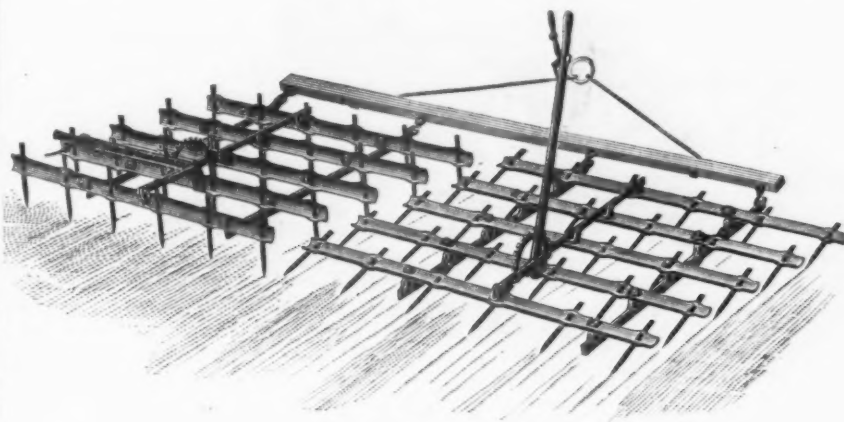
5 to 21 inches, inclusive, both bright and nicked. The company's special railroad wrench is made in 12, 15, 18 and 21 inches, and is especially adapted for the heaviest and roughest work. The capacity of the works has recently been doubled, owing to the increased demand for these wrenches.

### New B. M. T. Saw.

The new patent tooth B. M. T. Saw, devised by Warren Bundy, Minnesota City, Minn., and manufactured by the Montague-Woodrough Saw Company, 211 and 213 Randolph street, Chicago, Ill., is represented in the accompanying illustration. As shown in the cut, the teeth are arranged in sets of three each and after each set is a recess or gullet for the reception of the sawdust liberated. There are two distinct kinds of teeth in each set, two cutting teeth and one clearing tooth. The cutting teeth are made with the cutting edge on the outer edge of each tooth, and are arranged in step form, with a rise from the body of the saw of about 45°. The cutting edge is on opposite sides in each pair of teeth, so that the bevels face each other, thus making two parallel gashes in the wood. The purpose of the clearing tooth, which is slightly below the points of the cutting teeth and which is formed like a common mortising chisel, with its cutting edge at a right angle to the gash, is to clear away the wood between the two gashes into the recess or gullet before it, thus leaving the next pair of cutting teeth free from obstruction to their work. On drawing the saw back into the gash,

made specially for either of these purposes. Alluding to circular saws made with teeth of this pattern, the manufacturers refer to the smoothness of the cut, the saving of material lost in dressing, and the length of time that they will run without filing. They point out that the use of cross-cut and ripping tables is made unnecessary,

This harrow, an illustration of which is given below, is manufactured by the Weir Plow Company, Monmouth, Ill. The sections of this harrow cut each 5 feet and 3 inches, and contain each 30  $\frac{1}{4}$ -inch square steel teeth, 10 inches in length. The bars are oval shaped, punched to receive the teeth, which are driven to place



Weir Steel Bar Lever Harrow.

and that no time need be wasted, as at present, by substituting one saw for another. In jig saw work it is stated that the material is cut so smooth that mouldings, &c., are ready for use when they leave the saw. The adaptation of this style of tooth to band saws is also referred to.

It is also pointed out that saws with this pattern of teeth are easier to file and

while the bars are hot, which, contracting, hold them rigid. This is referred to as a very strong, durable and desirable harrow, and, unlike other steel harrows, can be laid flat on the ground without the lever bars on top being doubled and raised above the harrow, making them liable to break and accumulate trash. This harrow is furnished with two, three or four sections, as desired.



**Borcherdt's Fishing-Tackle Box.**

F. C. Wilson & Co., 239 and 241 Lake street, Chicago, are manufacturing a 'tin fishing-tackle box which is illustrated herewith. As will be observed, it has a series of pockets, which are the invention of a practical Chicago fisherman named J. C. Borcherdt. These pockets are made of water-proof parchment paper, rein-

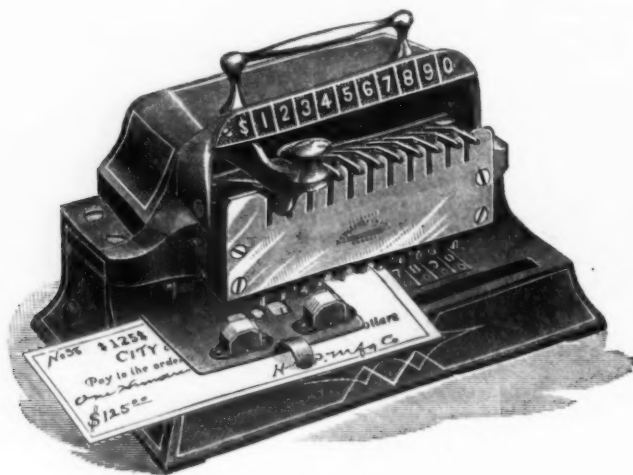


*Borcherdt's Fishing-Tackle Box.*

forced with tape, and are folded into two pieces of tin, one of which is permanently attached to the cover and the other movably attached by a simple turnbuckle, rendering the contents of the pockets readily accessible. Two sizes are made, the smaller having one tray and the larger three trays, with 16 and 24 pockets respectively. Space is also provided in each for two reels, trolling line, &c.

**Lowdon Bank Punch.**

This article is put on the market by the Lowdon Bank Punch Company, patentees and proprietors, Kansas City, Mo., for whom it is manufactured by the Hoggson & Pettis Mfg. Company, New Haven, Conn., who are also general Eastern agents. It is designed, as will readily be under-



*The Lowdon Bank Punch.*

stood, to punch out on the check figures representing the amount for which the check is drawn, in order to prevent fraudulent alterations. The machine consists of an outer frame or casing, in front of which is a row of 11 punches, which may be pressed down through corresponding openings in the steel plate below, which answers as the die. Inside the frame is a small carriage, to which is attached the hand lever, shown. To the same carriage is hinged a thin plate, which carries two

small rollers. This plate is pressed down by the action of the spring, and may be lifted by the finger when the paper to be punched is placed under it, where it is held between the two rollers and the third one, which is underneath and is called the feed-roller. This feed-roller is turned slightly during the upward movement of the hand lever, and thus the paper is carried forward sufficiently for the succeeding space. The carriage carrying the lever, the guide and feed rolls can be moved along from side to side, so that the lever when depressed will carry down with it the desired punch. In operation, after the paper has been put in place, the hand lever is moved to the extreme left, and depressed, which punches out the \$ mark. As it rises the paper is automatically moved along for the next space by the rollers, and the lever is then moved to any other desired figure, of course carrying the rolls and the paper along with it. It is again depressed, and the operation is repeated until all the figures are punched out, when it is returned to the left and the \$ mark repeated, to prevent other figures being added. The vertical plate in front has slots in its upper edge, into which the lever fits, and as the upper ends of these slots are enlarged to make the lever enter them easily they serve to center it accurately over the given punch, and thus bring the paper into the exact proper position.

The men employed in the limestone quarries in the Mahoning Valley, Ohio, recently made a demand for an increase of wages, which was refused by the operators, with the result that every quarry in the region has been compelled to suspend operations. It would seem that the demand of the men at this time is unjust, as they are making good wages, and the condition of the iron market does not warrant an advance. It is stated that the men themselves have but little to do with the trouble, but that they are acting under orders from headquarters of the Knights of Labor. We learn that one operator in the New Castle district has granted the advance, but he claims that he was compelled to do so on account of a contract to supply the Rosena Furnace, at New Castle, operated under lease by Oliver

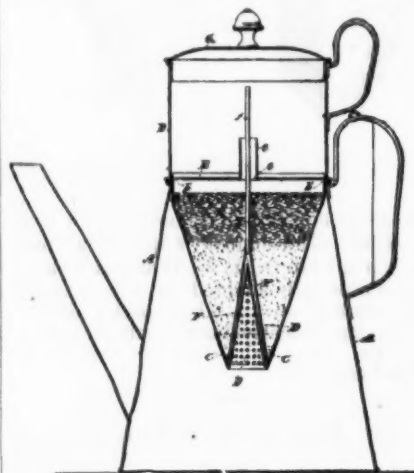
**The Muhammad Coffee Biggin.**

F. C. Wilson & Co., 239 and 241 Lake street, Chicago, are manufacturing a coffee biggin of new design, for which a patent was issued on the 4th of last December. Perspective and sectional views



*Fig. 1.—The Muhammad Coffee Biggin.*

of the article are shown herewith. In the sectional view A is the coffee-pot proper, B the percolator cup, C the sleeve, *b b* lugs, D perforated cone strainer, E perfor-



*Fig. 2.—Muhammad Coffee Biggin, Sectional View.*

ated diaphragm, F hood fitting over D, G cover fitting pot and percolator, *f* rod for raising hood F. The flow of water through the coffee is regulated by raising or lowering the hood F, and it is claimed that this is the only biggin in which the flow can be regulated so as to thoroughly reach the coffee. This coffee-pot holds 3 quarts, but is, at the same time, so constructed that two or three cups may be made in it with equal facility to the larger quantity.

Milwaukee capitalists have organized a company to prospect for natural gas at Oak Creek, near Racine, Wis. Gas is flowing quite heavily from a well 120 feet deep, and it is proposed to sink another in a better location not far away. The entire farm has been leased on which the discovery was made, and considerable excitement has been caused among the residents of the immediate vicinity.

# CURRENT HARDWARE PRICES.

FEBRUARY 13, 1889.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers' name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

## Ammunition.

<b>Caps, Percussion, 1000—</b>	
Hicks & Goldsmith's	50¢
F. L. Waterproof, 1-10's	50¢
E. B. Trimmed Edge, 1-10's	25¢
E. B. Grnd. Edge, Cent. Fire, 1-10's	75¢
Double Waterproof, 1-10's	50¢
Musket Waterproof, 1-10's	50¢
G. D.	25¢
S. B.	30¢
<b>Union Metallic Cartridge Co.</b>	
F. C. Trimmed	50¢
F. L. Ground	25¢
Cent. Fire Ground	75¢
Dbl. Waterproof, in 1-10's	50¢
S. B. Genuine Imp.orted	45¢
Eley's E. B.	54¢
Eley's D Waterproof, Central Fire	50¢
<b>Cartridges</b>	
Rim Fire Cartridges	50¢
Rim Fire Military	15¢
Cent. Fire Pistol and Rifle	25¢
Cent. Fire, Military and Sporting	25¢
<b>Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.</b>	
Blank Cartridges, 22 cal.	11.75¢
Blank Cartridges, 32 cal.	13.50¢
Primed Shells and Bullets	15¢
B. B. Caps, Round Ball	11.75¢
B. B. Caps, Con. Ball, swgd.	12.00¢
<b>Primers</b>	
Berdan Primers	11.00¢
B. L. Caps (for Sturtevant Shells)	11.00¢
All other Primers	11.20¢
<b>Shells</b>	
First quality, 4, 8, 10 and 12 gauge	25¢
First quality, 14, 16 and 20 gauge	30¢
Star, Club, Rival and Climax brands, 10 and 12 gauge	33¢
Club, Rival and Climax brands, 14, 16 and 20 gauge	34¢
seibold's Comb. Shot Shells	15¢
Brass Shot Shells, 1st quality	60¢
Brass Shot Shells, Club, Rival, Climax	65¢
I X L, 10 and 12 gauge	40¢
"Special," 16 gauge	30¢
"Special," 10 and 12 gauge	40¢
Fowler's Pat.	32.25¢
<b>Shells Loaded—</b>	
A. M. Co. List No. 19, 1887	20¢
<b>Wads—</b>	
U. M. C. & W. R. A.—B. E., 11 up.	2.00¢
U. M. C. & W. R. A.—B. E., 9 & 10	2.30¢
U. M. C. & W. R. A.—B. E., 7 & 8	2.60¢
U. M. C. & W. R. A.—P. E., 11 up.	3.10¢
U. M. C. & W. R. A.—P. E., 9 & 10	3.40¢
U. M. C. & W. R. A.—P. E., 7 & 8	3.70¢
Eley's B. E., 11 up.	11.75¢
Eley's P. E., 11 up.	2.80¢
<b>Anvils.</b>	
Eagle Anvils	10¢
Peter Wright's	10¢
Armstrong's Mouse Hole	8¢
Armstrong's Mouse Hole, Extra 11	11¢
Trenton	9¢
Wilkinson's	9¢
J. & Riley Carr, Pat. Solid	11¢
Moore & Barnes Mfg. Co.	33¢
<b>Anvil Vise and Drill</b>	
Millers Falls Co.	18.00¢
Cheney Anvil and Vise	25¢
Allen Combined Anvil and Vise	33.00¢
	40¢
<b>Apple Parers—</b>	
Advance	4.75¢
Antrim Combination	5.50¢
Baldwin	5.25¢
Champion	7.25¢
Eureka, 1888	12.00¢
Family Bay State	12.00¢
Gem	5.25¢
Good Medal	4.00¢
Hudson's New '88	3.75¢
Ideal	4.75¢
Improved Bay State	30.00¢
Little Star	5.00¢
Monarch	13.50¢
New Lightning	5.50¢
Oriole	4.00¢
Penn	4.00¢
Perfection	4.00¢
Pomona	4.00¢
Rocking Table	4.00¢
Turntable	4.50¢
Victor	13.50¢
Waverly	4.50¢
White Mountain	4.25¢
72	4.25¢
76	5.75¢
78	6.50¢
<b>Augers and Bits—</b>	
Douglas Mfg. Co.	70¢
Wm. A. Ives & Co.	70¢
Humphreysville Mfg. Co.	70¢
French, Swift & Co. (F. H. Beecher, Cook's, N. H. Copper Co.)	55¢
Ives' Circular Lip	60¢
Patent Solid Head	30¢
C. E. Jennings & Co.	40¢
72	40¢
C. E. Jennings & Co., No. 30	60¢
C. E. Jennings & Co., Auger Bits, 32¢	32¢
32¢ quarters, No. 5, 15; No. 30, 33	32¢
Lewis' Patent Single Twist	45¢
Jennings' Augers and Bits	25¢
Imitation Jennings' Bits	60¢
Pugh's Black	30¢
Car Bits	50¢
L'Hommiedieu Car Bits	15¢
Orstner Pat. Auger Bits	10¢

## Hollow Augers—

Ives'	25¢
French, Swift & Co.	25¢
Douglas	10¢
Bonney's Adjustable	40¢
Stearns'	50¢
Ives' Expansive, each \$4.50	50¢
Universal Expansive, each \$4.50	20¢
Wood's	25¢

## Expansive Bits—

Clarks' small, 18; large, 26	35¢
Ives' No. 4, 1/2 doz \$60	45¢
Swan's	40¢
Stearns, No. 1, 26; No. 2, 22	35¢
Stearns' No. 2, 24	20¢

## Gimlet Bits—

Common	25¢
Diamond	25¢
"Bee"	25¢
Double Cut, Sheppard's	45¢
Double Cut, Ct. Valley Mfg. Co.	30¢
Double Cut, Hartwell's	35¢
Double Cut, Douglas	40¢
Double Cut, Ives	60¢

## Bit Stock Drills—

Morse Twist Drills	50¢
Standard	50¢
Cleveland	50¢
Syracuse, for metal	50¢
Syracuse, for wood (wood list)	30¢
Williams' or Holt's, for metal	50¢
Williams' or Holt's, for wood	40¢

## Ship Augers and Bits—

L'Hommiedieu's	15¢
Watrous'	15¢
Snell's	15¢
Snell's Ship Auger Pat'n Car Bits	15¢

## Awl Hafts—

Sewing, Brass Fer. 1/2 gr.	35¢
Pat. Sewing, Short, 1/2 gr.	40¢
Pat. Sewing, Long	40¢
Pat. Peg, Plain Top	10¢
Pat. Peg, Leather Top	12¢

## Awls, Brad Sets, &c—

Awls, Sewing, Common	17¢
Awls, Should. Peg	24¢
Awls, Pat. Peg	63¢
Awls, Shouldered Brad	27¢
Awls, Handled Brad	75¢
Awls, Handled Scratch	75¢
Awls, Socket Scratch	15¢

## Awl and Tool Sets—

Alken's Sets, Awls and Tools	10¢
No. 20, 1/2 doz \$10.00	55¢
Fray's Adj. Tool Hds., Nos. 1, 12; 2, 18; 3, 12; 4, 8	25¢
Miller's Falls Adj. Tool Hds.	12¢
Nos. 1, 12; 2, 18	25¢
Henry's Combination Haft	25¢
Brad Sets	10¢
No. 42, \$10.50; No. 43, \$12.50	70¢
Stanley's Excelsior	10¢
No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50	30¢

## Axes—

First quality	50¢
Others	50¢

## Makers' and Special Brands—

Fraser's	4¢
Fraser's, in boxes	25¢
Dixon's Everlasting, in bxs.	12¢
Dixon's Everlasting	12¢
Lower grades, special brands	75¢

## Axle Grease—

No. 1	4¢
Nos. 7 to 18	50¢
Nos. 19 to 22	60¢
National Tubular Self-Oiling: Standard Farm (1 to 5) and Special Farm (A1 to A5)	33¢
Less than 10 sets	33¢
Over 10 sets	33¢

## Axles—

No. 1	4¢
Nos. 7 to 18	50¢
Nos. 19 to 22	60¢
National Tubular Self-Oiling: Standard Farm (1 to 5) and Special Farm (A1 to A5)	33¢
Less than 10 sets	33¢
Over 10 sets	33¢

## Bag Holders.

Spring Balances	50¢
Common 24-lb.	15¢
Chatillon's Spring Balances	50¢
Chatillon's Circular Spring Balances	60¢

## Bells—

Light Brass	70¢
Extra Heavy	60¢
White Metal	60¢
Silver Chime	33¢
Globe (Cane's Patent)	25¢

## Hand—

Gong, Abbe's	33¢
Gong, Yankee	45¢
Gong, Barton's	40¢
Crank, Taylor's	25¢
Crank, Brooks	50¢
Crank, Cone's	10¢

## Door—

Douglas	50¢
Snell's, Rice's Pat.	50¢
Jennings	50¢
Other Machines	23¢
Phillips' Patent	7.00
with Augers	7.50

Crank, Connel's	20¢
Lever, Sargent's	60¢
Lever, Taylor's Bronzed or Plated	25¢
Lever, Taylor's Japanned	25¢
Lever, R. E. M. Co.'s	50¢
Pull, Brook's	50¢
Pull, Western	25¢

## Cow—

Common Wrought	60¢
Western	20¢
Western, Sargent's list	70¢
Kentucky, "Star"	20¢
Kentucky, Sargent's list	70¢
Dodge, Genuine Kentucky	70¢
Texas Star	50¢
Call	40¢
Farm Bells	30¢
Steel Alloy Church and School Bells	40¢

## Bellows—

Blacksmiths'	50¢
Molders'	40¢
Hand Bellows	40¢

## Belting, Rubber—

Common Standard	70¢
Standard	70¢
Extra	60¢
N. Y. B. & P. Co., Carbon	60¢
N. Y. B. & P. Co., Diamond	60¢

## Bench Stops—

Morrill's	50¢
Hotchkiss's	50¢
Austin & Eddy No. 1	10¢
McGill's	50¢

## Bits—

Auger, Gimlet, Bit Stock, Drills, &c.	10¢
Augers and Bits	10¢

## Bit Holders—

Extension, Barber's	15¢
Extension, Ives	20¢
Diagonal	20¢
Angular	20¢

## Blind Adjusters—

Domestic	30¢
Excelsior	20¢
Washburn's Self-Locking	20¢

## Blind Fasteners—

Mackrell's	10¢
Van Sand's Screw Pat.	15¢
Van Sand's Old Pat.	15¢
Washburn's Old Pattern	10¢
Merriman's	10¢
Austin & Eddy No. 2	10¢
Security Gravity	10¢

## Blind Staples—

Barbed, 1/2 in. and larger	7¢
Barbed, 3/4 in.	8¢

## Blocks—

Cleveland Block Co., Mal. Iron	50¢
Novelty Tackle Blocks, Mal. Iron	50¢

## Bolts—

Door and Shutter—	
Cast Iron Barrel, Square, &c.	70¢
Cast Iron Shutter Bolts	70¢
Cast Iron Chain (Sargent's list)	65¢
Ives' Patent Door Bolts	60¢
Wrought Barrel	70¢
Wt's Shutter, all Iron, Stanley's	60¢
Wt's Shutter, Brass Knob	40¢
Wt's Sunk Flush, Sargent's list	50¢
Wt's Sunk Flush, Stanley's list	50¢
Wt's B.K. Flush, Com'n	55¢

## Carriage, Machine, &c—

Com. list June 10, '84	75¢
Genuine Eagle, list Oct. '84	75¢
Phila. pattern, list Oct. '84	75¢
R.B. & W., old list	70¢
Machine, according to size	75¢
Bolt Ends, according to size	75¢

## Tire—

Common, list Feb. 28, '83	70¢
P.C.B. & N. Co.	70¢
Empire, list Feb. 28, '83	70¢
Phila., list Oct. '84	80¢
Keystone, Philadel., list Oct. '84	80¢
Norway, Phila., list Oct. '84	75¢
Am.S. Co.	75¢
Norway, Phila., list Oct. 16, '84	75¢
Eagle, Phila., list Oct. 16, '84	80¢
Phila., list Oct. 16, '84	82¢
Bay State, list Feb. 28, '83	70¢
R.B. & W., Philadel., list Oct. 16, '84	82¢
R.B. & W. Mfg. Co.	70¢

## Stove and Plow—

Stove	62¢
Plow	60¢
Am. S. Co. Stove, Annealed	62¢
R. B. & W., Plow	62¢
R. B. & W., Stove	62¢
R. E. Mfg. Co., Stove	62¢

## Boring Machines—

Without Augers	50¢
Douglas	50¢
Snell's, Rice's Pat.	50¢
Jennings	50¢
Other Machines	23¢
Phillips' Patent	7.00
with Augers	7.50

## Bow Pins—

Humason, Beckley & Co.'s	60¢
Sargent & Co.'s	17¢
Peck, Stow & W. Co.	50¢

## Braces—

Barber's	50¢
Nos. 10 to 16	50¢
Nos. 30 to 33	50¢
Nos. 40 to 63	50¢
Barker's	75¢
Nos. 8, 10 and 12	75¢
Plated, Nos. 8, 10 and 12	75¢
Osgood's Ratchet	40¢
Spofford's	50¢
Ives' New Haven Novelty	70¢
New Haven Ratchet	60¢
Barber Ratchet	60¢
Barbers	60¢
Spofford	60¢
Common Ball, American	11¢
Bartholomew's	50¢
Nos. 25, 27 and 30	50¢
Nos. 117, 118, 119	70¢
Amidon's	75¢
Barker's Imp'd Plain	75¢
Barker's Imp. Nickled	75¢
Ratchet	75¢
Eclipse Ratchet	60¢
Globe Jawed	40¢
Corner Brace	40¢
Universal, 8 in., 12 in., 10 in.	25¢
Buffalo Ball	11¢
P. S. & W.	50¢

## Brackets—

Shelf, plain, Sargent's list	55¢
Shelf, fancy, Sargent's list	60¢
Reading, plain	50¢
Reading, Rosette	60¢

## Bright Wire Goods.

85¢	10¢	55¢	10¢
85¢	10¢	55¢	10¢

## Broilers—

<b>Buckets</b> —See Well Buckets and Pails.	
<b>Bull Rings</b> —	
1/2 in. Dia. No. 1	55¢





**Cross-Cut Saw Handles—**  
 Atkins' No. 1 Loop, pair, 30¢; No. 3, 22¢; No. 2 and No. 4 Reversible, 22¢.  
 Boynton's Loop Saw Handles, 50¢, dis 60¢  
 Champion.....15¢

### Hangers—

Barn Door, old patterns.....60¢10¢10¢70¢  
 Barn Door, New England.....60¢10¢10¢70¢  
 Samson Steel Anti-Friction.....55¢  
 Orleans Steel.....55¢  
 Hamilton Wrought Wood Track.....55¢  
 U. S. Wood Track.....65¢  
 Champion.....60¢10¢  
 Rider and Wooster, Medina Mfg. Co.'s list.....70¢  
 Climax Anti-Friction.....55¢  
 Climax Steel Anti-Friction.....55¢  
 Zenith for Wood Track.....55¢  
 Reed's Steel Arm.....55¢  
 Challenge, Barn Door.....55¢  
 Sterling's Imp'ved (Anti-Friction) 65¢10¢  
 Victor, No. 1, \$15.00; No. 2, \$15.50; No. 3, \$18.00.....dis 50¢25¢  
 Cherline.....50¢10¢  
 Kidder's.....50¢10¢60¢  
 The "Boss".....60¢  
 Best Anti-Friction.....60¢  
 Duplex (Wood Track).....60¢  
 Terry's Pat., ½ doz pr. 4 in, \$10.00; 5 in, \$12.00.....dis 50¢55¢50¢10¢  
 Cronk's Pat., No. 4, \$12.00; No. 5, \$14.40; No. 6, \$18.00.....dis 50¢15¢60¢  
 Wood Track Iron Clad, ½ ft. 10¢, dis 50¢15¢60¢

Carrier Steel Anti-Friction.....50¢50¢55¢  
 Architect.....50¢ set \$6.00, dis 20¢  
 Echelle.....20¢10¢  
 Fell's.....30¢30¢10¢  
 Richards.....30¢30¢10¢  
 Lane's Steel Anti-Friction.....40¢10¢  
 Ball Bearing Door Hanger.....20¢10¢25¢10¢  
 Warner's Pat.....30¢20¢10¢  
 Stearns' Anti-Friction.....20¢20¢10¢  
 Stearns' Challenge.....25¢10¢25¢10¢  
 Faultless.....40¢40¢55¢  
 American.....½ set \$6.00, dis 20¢10¢  
 Rider & Wooster, No. 1, 62¢; No. 2, 75¢.....dis 40¢  
 Paragon, Nos. 1, 2 and 3.....40¢10¢  
 Paragon, Nos. 5, 7 and 8.....20¢10¢  
 Crescent.....60¢60¢10¢  
 Nickel, Cast Iron.....50¢  
 Nickel, Malleable Iron and Steel.....50¢  
 Scranton Anti-Friction Single Strap.....30¢  
 Scranton Anti-Friction Double Strap.....40¢  
 Universal Anti-Friction.....40¢  
 Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00.....dis 45¢  
 Star.....40¢10¢40¢10¢55¢  
 May.....50¢55¢50¢10¢  
 Barry, \$6.00.....dis 40¢10¢

### Harness Snaps—

See Snaps.

### Hatchets—

List Jan. 1, 1888.....35¢40¢  
 Isaiah Blood.....40¢40¢  
 Hunt's Shingling, Lath and Claw.....40¢45¢  
 Hunt's Broad.....40¢  
 Buffalo Hammer Co.....40¢10¢50¢  
 Hurd's.....40¢10¢50¢  
 Fayette R. Plumb.....40¢10¢50¢  
 Wm. Mann, Jr.....40¢10¢50¢  
 Underhill Edge Tool Co.....40¢40¢10¢  
 Underhill's, Haines and Bright.....30¢45¢  
 C. Hammond & Son.....40¢10¢50¢  
 Simmons.....40¢10¢50¢  
 Kelly's.....40¢10¢40¢10¢55¢  
 Sargent & Co.....50¢50¢  
 Ten Eyck Edge Tool Co.....40¢10¢40¢10¢55¢  
 Collins.....10¢

### Hay and Straw Knives—

Lightning.....Mfrs. price ½ doz \$18.00  
 Electric.....½ doz \$17.....dis 25¢  
 Gem.....½ doz \$10.....dis 30¢30¢45¢  
 Wadsworth's.....40¢75¢40¢10¢  
 Carter's Needle.....½ doz \$11.50¢\$12.00  
 Heath's.....½ doz \$13.50¢\$14.00  
 Auburn Hay, Common and Spear Point.....40¢

### Auburn, Straw—

40¢

### Hinges—

**Wrought Iron Hinges**  
 Strap and T.....75¢75¢55¢  
 Screw Hook and.....14 to 20 in., ½ doz.....35¢  
 Strap.....22 to 36 in., ½ doz.....35¢  
 Heavy Welded.....6 to 12 in., ½ doz.....35¢  
 Hook.....14 to 20 in., ½ doz.....35¢  
 Hook.....22 to 36 in., ½ doz.....35¢  
 Screw Hook.....½ in., ½ doz \$2.45; 1 in., ½ doz \$3.80; 1½ in., ½ doz \$5.00  
 Rolled Blind Hinges, Nos. 32 and 34.....50¢10¢  
 Rolled Blind Hinges, Nos. 332 and 234.....55¢10¢  
 Rolled Plate.....70¢10¢  
 Rolled Raised.....70¢10¢  
 Plate Hinges (8, 10 & 12 in., ½ doz.....5¢  
 "Providence" over 12 in., ½ doz.....45¢  
**Spring Hinges**  
 Geer's Spring and Blank Butts.....40¢  
 Union Spring Hinge Co.'s list, March, 1888.....20¢  
 Acme and U. S.....30¢  
 Empire and Crown.....30¢  
 Hero and Monarch.....50¢  
 American, Gem, and Star, Japanned.....30¢  
 American, Gem, and Star, Bronzed.....net  
 Oxford, Bronze and Brass.....net  
 Barker's Double Acting.....20¢10¢  
 Union Mfg. Co.....25¢  
 Bommer's.....30¢  
 Buckman's.....15¢20¢  
 Chicago.....30¢  
 Wiles.....10¢  
 Devore's.....40¢  
 Rex.....40¢

### Gate Hinges—

Western.....½ doz \$4.40, dis 60¢  
 N. E.....½ doz \$7.00, dis 55¢  
 N. E. Reversible.....½ doz \$6.20, dis 55¢10¢  
 Clark's, Nos. 1, 2, 3.....60¢10¢55¢  
 N. Y. State.....½ doz \$5.00, dis 55¢10¢  
 Automatic.....½ doz \$12.50, dis 50¢  
 Common Sense.....½ doz pair \$4.50, dis 50¢  
 Seymour's.....60¢10¢55¢  
 Shepard's.....60¢10¢55¢  
 Reed's Latch and Hinges.....½ doz \$12.00, dis 50¢

### Blind Hinges—

Parker.....75¢25¢  
 Palmer.....50¢45¢10¢  
 Seymour.....70¢25¢  
 Nicholson.....45¢10¢  
 Huffer.....50¢  
 Clark's, Nos. 1, 3, 5, 40 and 50.....75¢10¢55¢80¢

Clark's Mortise Gravity.....50¢  
 Sargent's, Nos. 1, 3, 5, 11, 13.....75¢10¢75¢10¢55¢  
 Reading's Gravity.....75¢10¢75¢10¢55¢  
 Shepard's Noiseless Niagara Buffalo, Champion, Steamboat, Clark's Old Pattern and Clark's Tip Pattern.....75¢10¢55¢  
 Shepard's O. S., Lull & Porter.....75¢10¢  
 Sargent's Acme, Lull & Porter.....75¢10¢  
 Shepard's Queen City Reversible.....75¢  
 Clark's Lull & Porter, Nos. 0, 1, 14, 2, 2½, 3.....75¢10¢25¢55¢  
 North's Automatic Blind Fixtures, No. 2, for Wood, \$10.50; No. 3, for Brick, \$13.50.....25¢25¢

### Hoes—

**Handled—**  
 Garden, Mortar, &c.....65¢  
 Planter's, Cotton, &c.....65¢  
 Warren Hoe.....60¢  
 Magic.....½ doz \$4.00

### Eye—

D. & H. Scovill.....20¢  
 Lane's Crescent Planter Pattern.....45¢55¢  
 Lane's Razor Blade, Scovill Pattern.....30¢  
 Maynard, S. & O. Pat.....45¢55¢  
 Sandusky Tool Co., S. & O. Pat.....60¢  
 Hubbard & Co., S. & O. Pat.....60¢  
 Chattanooga Tool Co., S. & O. Pat.....60¢  
 Grub.....60¢60¢10¢

### Hog Rings and Ringers—

Hill's Improved Ringers.....½ doz \$4.50  
 Hill's Old Style Ringers.....½ doz \$3.00  
 Hill's Tongs.....½ doz \$4.50  
 Hill's Rings.....½ doz bxs \$2.25¢2.40  
 Perfect Rings.....½ doz bxs \$1.75¢2.00  
 Perfect Ringers.....½ doz \$2.50  
 Blair's Hog Ringers.....½ doz \$2.60¢2.85  
 Blair's Hog Ringers.....½ doz \$2.60¢2.85  
 Champion Ringers.....½ doz \$2.00  
 Champion Rings, Double.....½ doz \$2.25  
 Brown's Ringers.....½ doz \$2.00  
 Brown's Rings.....½ doz \$1.25¢1.30

### Hoisting Apparatus—

"Moore's" Hand Hoist, with Lock Brake.....20¢  
 "Moore's" Differential Pulley Block.....20¢  
 Energy Mfg. Co.'s.....25¢

### Holders, File and Tool—

Balz Pat.....½ doz \$4.00; dis 25¢  
 Nicholson File Holders.....20¢

### Hollow-Ware—

**Iron—**  
 Stove Hollow-Ware—  
 Ground.....60¢60¢55¢  
 Unground.....60¢10¢60¢10¢10¢  
 Enameled Hollow-Ware—  
 Man & Kettles.....65¢10¢  
 Boilers and Saucepans.....40¢55¢  
 Tinned Boilers and Saucepans.....40¢  
 Gray Enameled-Ware—  
 Stove.....50¢50¢55¢  
 Maslin Kettles.....60¢10¢60¢10¢10¢  
 Boilers and Saucepans.....40¢55¢  
 Agate and Granite Ware.....25¢  
 Rustless Hollow-Ware.....50¢50¢55¢  
 Galvanized Tea-Kettles—  
 Inch.....6 7 8 9  
 Each.....55¢ 60¢ 65¢ 75¢

### Silver Plated—

4 mo. or 5 ½ cash in 30 days.  
 Reed & Barton.....40¢55¢  
 Meriden Britannia Co.....40¢55¢  
 Simpson, Hall, Miller & Co.....40¢55¢  
 Rogers & Brother.....40¢55¢  
 Hartford Silver Plate Co.....40¢55¢  
 William Rogers Mfg. Co.....40¢55¢

### Hooks—

**Cast Iron—**  
 Bird Cage, Sargent's list.....60¢10¢10¢  
 Bird Cage, Reading.....60¢10¢10¢  
 Clothes Line, Sargent's list.....60¢10¢10¢  
 Clothes Line, Reading list.....60¢10¢10¢  
 Ceiling, Sargent's list.....55¢10¢10¢  
 Harness, Reading list.....55¢10¢10¢  
 Coat and Hat, Sargent's list.....55¢10¢10¢  
 Coat and Hat, Reading.....50¢10¢50¢10¢10¢  
**Wrought Iron—**  
 Cotton.....½ doz \$1.25  
 Cotton Pat. (N. Y. Mailer & Handle W'ks.).....30¢  
 Tassel and Picture (T. & S. Mfg. Co.).....50¢  
 Wrought Staples, Hooks, &c.....See Wrought Goods.

### Wire—

Wire Coat and Hat, Gem, list April, 1888.....45¢  
 Wire Coat and Hat, Miles', list April, 1888.....45¢  
 Indestructible Coat and Hat.....45¢  
 Wire Coat and Hat, Standard.....45¢  
 Belt.....75¢10¢80¢

### Miscellaneous

Grass, No. 2, \$2.00; No. 3, \$2.25; No. 4, \$2.50  
 Bush.....55¢60¢  
 Whiffletree—Patent.....55¢  
 Hooks and Eyes—Malleable Iron.....70¢70¢10¢  
 Fish Hooks, American.....60¢10¢  
 Bench Hooks.....See Bench Stops.

### Horse Nails—

Nos. 6 7 8 9 10  
 Ausable.....28¢ 20¢ 25¢ 24¢ 23¢  
 Clinton, Fin.....24¢ 22¢ 21¢ 20¢ 19¢  
 Essex.....28¢ 20¢ 25¢ 24¢ 23¢  
 Lyra.....25¢ 23¢ 22¢ 21¢ 20¢  
 Snowden.....25¢ 23¢ 22¢ 21¢ 20¢  
 Putham.....23¢ 21¢ 20¢ 19¢ 18¢  
 Vulcan.....23¢ 21¢ 20¢ 19¢ 18¢  
 Northwest.....25¢ 23¢ 22¢ 21¢ 20¢  
 Globe.....23¢ 21¢ 20¢ 19¢ 18¢  
 Boston.....23¢ 21¢ 20¢ 19¢ 18¢  
 A. C.....25¢ 23¢ 22¢ 21¢ 20¢  
 C. B.-K.....25¢ 23¢ 22¢ 21¢ 20¢  
 Champlain.....28¢ 20¢ 25¢ 24¢ 23¢

New Haven.....28¢ 20¢ 25¢ 24¢ 23¢  
 Saranac.....23¢ 21¢ 20¢ 19¢ 18¢  
 Champion.....25¢ 23¢ 22¢ 21¢ 20¢  
 Capewell.....28¢ 20¢ 25¢ 24¢ 23¢  
 Star.....23¢ 21¢ 20¢ 19¢ 18¢  
 Anchor.....23¢ 21¢ 20¢ 19¢ 18¢  
 Western.....23¢ 21¢ 20¢ 19¢ 18¢  
 Empire Bronzed.....14¢ 13¢

### Horse Shoes—See Shoes Horse.

### Hose, Rubber—

Competition.....75¢10¢75¢10¢55¢  
 Standard.....70¢70¢10¢  
 Extra.....60¢60¢10¢  
 N. Y. B. & P. Co., Para.....30¢10¢  
 N. Y. B. & P. Co., Extra.....50¢  
 N. Y. B. & P. Co., Dundee.....60¢10¢55¢

### Huskers—

Blair's Adjustable.....½ gr \$8.00  
 Blair's Adjustable Clipper.....½ gr 7.00

### Indurated Fiber-Ware.

Spittoons, No. 2, ½ doz.....\$6.75  
 Basins, Ringed, ½ doz., No. 1, \$3.70; No. 2, \$3.10; No. 3.....\$2.70  
 Wehtubs, Nested, Nos. 0, 1, 2 and 3 (pieces), ½ doz, nests.....\$1.87  
 Keelers, Nested, Nos. 1, 2, 3 and 4 (pieces), ½ doz, nests.....\$8.37  
 Butter Bowls, 17 and 19-inch (3 pieces), ½ doz, nests.....\$0.75  
 Liquid Measures, pt., qt., 2 qt. and full (4 pieces), ½ doz.....\$3.00  
 Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ½ set.....\$2.25  
 See also *Fails*.

### Jack Screws—See Screws.

**Kettles—** Spun, Stamped.  
 Brass, 7 to 17 in., ½ doz.....24¢ 21¢  
 Brass larger than 17 in., 26¢ 23¢  
 Enameled and Tea Kettles.....See Hollow-Ware.

### Keys—

Lock Ass'n list Dec. 30, 1888.....50¢10¢  
 Eagle, Cabinet, &c.....33½¢25¢  
 Hotchkiss' Brass Blanks.....40¢  
 Hotchkiss, Copper and Tinned.....40¢  
 Hotchkiss' Pad, and Cab.....35¢  
 Ratchet Bed Keys.....½ doz \$4.00, dis 15¢  
 Wollensack Tinned.....50¢10¢

### Knife Sharpeners—

Pard'n's Applewood Handles.....½ doz \$6.00  
 Pard'n's Rosewood or Cocobolo.....½ doz \$9.00  
 See *Hollow-Ware*.

### Knives—

Wilson's Butcher Knives.....25¢30¢  
 Ames' Butcher Knives.....25¢  
 Foster Bros' Butcher, &c.....40¢  
 Nichols' Butcher Knives.....40¢10¢  
 Ames' Shoe Knives.....20¢25¢  
 Ames' Bread Knives.....½ doz \$1.50, dis 15¢20¢  
 Moran's Shoe and Bread.....20¢  
 Hay and Straw.....See Hay Knives.  
 Table and Pocket.....See Cutlery.  
 Corn, Auburn Mfg. Co. Western Pat.....\$2.00  
 Corn, Auburn Mfg. Co. Crescent.....\$3.50

### Knobs—

Door Mineral.....65¢68¢  
 Door Por. Nickel.....\$2.00¢2.25  
 Door Por. Plated, Nickel.....\$2.00¢2.25  
 Drawer, Porcelain.....60¢10¢60¢10¢10¢  
 Hemacite Door Knobs.....40¢10¢50¢  
 Yale & Towne Wood, list Dec., 1885.....40¢  
 Furniture, China.....75¢ gr inch, dis 10¢  
 Furniture, Wood Screws.....25¢10¢  
 Base, Rubber Tip.....70¢10¢55¢  
 Picture, Judd's.....60¢10¢10¢70¢  
 Picture, Sargent's.....70¢10¢  
 Picture, Hemacite.....35¢55¢  
 Shutter, Porcelain.....65¢10¢  
 Carriage, Jap.....½ gro 80¢, dis 60¢10¢

### Ladles—

L. Melting, Sargent's.....55¢10¢  
 Melting, Reading.....35¢10¢  
 Melting, Monroe's Pat. ½ doz \$4.00, dis 40¢  
 Melting, P. S. & W.....35¢10¢40¢  
 Melting, Warner's.....30¢

### Lawn Mowers—

Standard list.....50¢10¢  
 Quaker City.....dis 60¢10¢  
 Enterprise.....60¢10¢

### Lanterns—

**Tubular—**  
 Plain with Guards, ½ doz.....\$4.00¢4.25  
 List Wire, with Guards.....\$4.50¢4.75  
 Square Plain, with Guards.....\$4.00¢4.25  
 Sq. Lift Wire, with Guards.....\$4.25¢4.50  
 Without Guards, 25¢ ½ doz less.

Police, Small, \$6.00; Medium, \$7.25; Large, \$9.75.....dis 20¢25¢

### Lemon Squeezers—

Porcelain Lined, No. 1, ½ doz \$6.00, dis 25¢30¢  
 Wood, No. 2.....½ doz \$3.00, dis 35¢  
 Wood, Common.....½ doz \$1.70¢1.75  
 Dunlap's Improved.....½ doz \$3.75, dis 20¢  
 Sammis.....No. 1, \$5.00; No. 2, \$6.12; No. 3, \$7.25  
 Jennings' "Star".....½ doz \$2.50  
 The "Boss".....½ doz \$2.50  
 Dean's.....No. 1, ½ doz \$6.50; 2, \$3.35; 3, \$1.90  
 Little Giant.....50¢50¢55¢  
 King.....40¢55¢

### Lines—

Cotton and Linen Fish, Draper's.....50¢  
 Draper's Chalk.....60¢  
 Draper's Mason's Lines, 84 ft., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25.....dis 25¢  
 Cotton Chalk.....55¢  
 Samson, Cotton, No. 4, \$2; No. 4½, \$2.50; No. 5, \$3.00; No. 6, \$3.50; No. 7, \$4.00; No. 8, \$4.50; No. 9, \$5.00; No. 10, \$5.50; No. 11, \$6.00; No. 12, \$6.50; No. 13, \$7.00; No. 14, \$7.50; No. 15, \$8.00; No. 16, \$8.50; No. 17, \$9.00; No. 18, \$9.50; No. 19, \$10.00; No. 20, \$10.50; No. 21, \$11.00; No. 22, \$11.50; No. 23, \$12.00; No. 24, \$12.50; No. 25, \$13.00; No. 26, \$13.50; No. 27, \$14.00; No. 28, \$14.50; No. 29, \$15.00; No. 30, \$15.50; No. 31, \$16.00; No. 32, \$16.50; No. 33, \$17.00; No. 34, \$17.50; No. 35, \$18.00; No. 36, \$18.50; No. 37, \$19.00; No. 38, \$19.50; No. 39, \$20.00; No. 40, \$20.50; No. 41, \$21.00; No. 42, \$21.50; No. 43, \$22.00; No. 44, \$22.50; No. 45, \$23.00; No. 46, \$23.50; No. 47, \$24.00; No. 48, \$24.50; No. 49, \$25.00; No. 50, \$25.50; No. 51, \$26.00; No. 52, \$26.50; No. 53, \$27.00; No. 54, \$27.50; No. 55, \$28.00; No. 56, \$28.50; No. 57, \$29.00; No. 58, \$29.50; No. 59, \$30.00; No. 60, \$30.50; No. 61, \$31.00; No. 62, \$31.50; No. 63, \$32.00; No. 64, \$32.50; No. 65, \$33.00; No. 66, \$33.50; No. 67, \$34.00; No. 68, \$34.50; No. 69, \$35.00; No. 70, \$35.50; No. 71, \$36.00; No. 72, \$36.50; No. 73, \$37.00; No. 74, \$37.50; No. 75, \$38.00; No. 76, \$38.50; No. 77, \$39.00; No. 78, \$39.50; No. 79, \$40.00; No. 80, \$40.50; No. 81, \$41.00; No. 82, \$41.50; No. 83, \$42.00; No. 84, \$42.50; No. 85, \$43.00; No. 86, \$43.50; No. 87, \$44.00; No. 88, \$44.50; No. 89, \$45.00; No. 90, \$45.50; No. 91, \$46.00; No. 92, \$46.50; No. 93, \$47.00; No. 94, \$47.50; No. 95, \$48.00; No. 96, \$48.50; No. 97, \$49.00; No. 98, \$49.50; No. 99, \$50.00; No. 100, \$50.50; No. 101, \$51.00; No. 102, \$51.50; No. 103, \$52.00; No. 104, \$52.50; No. 105, \$53.00; No. 106, \$53.50; No. 107, \$54.00; No. 108, \$54.50; No. 109, \$55.00; No. 110, \$55.50; No. 111, \$56.00; No. 112, \$56.50; No. 113, \$57.00; No. 114, \$57.50; No. 115, \$58.00; No. 116, \$58.50; No. 117, \$59.00; No. 118, \$59.50; No. 119, \$60.00; No. 120, \$60.50; No. 121, \$61.00; No. 122, \$61.50; No. 123, \$62.00; No. 124, \$62.50; No. 125, \$63.00; No. 126, \$63.50; No. 127, \$64.00; No. 128, \$64.50; No. 129, \$65.00; No. 130, \$65.50; No. 131, \$66.00; No. 132, \$66.50; No. 133, \$67.00; No. 134, \$67.50; No. 135, \$68.00; No. 136, \$68.50; No. 137, \$69.00; No. 138, \$69.50; No. 139, \$70.00; No. 140, \$70.50; No. 141, \$71.00; No. 142, \$71.50; No. 143, \$72.00; No. 144, \$72.50; No. 145, \$73.00; No. 146, \$73.50; No. 147, \$74.00; No. 148, \$74.50; No. 149, \$75.00; No. 150, \$75.50; No. 151, \$76.00; No. 152, \$76.50; No. 153, \$77.00; No. 154, \$77.50; No. 155, \$78.00; No. 156, \$78.50; No. 157, \$79.00; No. 158, \$79.50; No. 159, \$80.00; No. 160, \$80.50; No. 161, \$81.00; No. 162, \$81.50; No. 163, \$82.00; No. 164, \$82.50; No. 165, \$83.00; No. 166, \$83.50; No. 167, \$84.00; No. 168, \$84.50; No. 169, \$85.00; No. 170, \$85.50; No. 171, \$86.00; No. 172, \$86.50; No. 173, \$87.00; No. 174, \$87.50; No. 175, \$88.00; No. 176, \$88.50; No. 177, \$89.00; No. 178, \$89.50; No. 179, \$90.00; No. 180, \$90.50; No. 181, \$91.00; No. 182, \$91.50; No. 183, \$92.00; No. 184, \$92.50; No. 185, \$93.00; No. 186, \$93.50; No. 187, \$94.00; No. 188, \$94.50; No. 189, \$95.00; No. 190, \$95.50; No. 191, \$96.00; No. 192, \$96.50; No. 193, \$97.00; No. 194, \$97.50; No. 195, \$98.00; No. 196, \$98.50; No. 197, \$99.00; No. 198, \$99.50; No. 199, \$100.00; No. 200, \$100.50; No. 201, \$101.00; No. 202, \$101.50; No. 203, \$102.00; No. 204, \$102.50; No. 205, \$103.00; No. 206, \$103.50; No. 207, \$104.00; No. 208, \$104.50; No. 209, \$105.00; No. 210, \$105.50; No. 211, \$106.00; No. 212, \$106.50; No. 213, \$107.00; No. 214, \$107.50; No. 215, \$108.00; No. 216, \$108.50; No. 217, \$109.00; No. 218, \$109.50; No. 219, \$110.00; No. 220, \$110.50; No. 221, \$111.00; No. 222, \$111.50; No. 223, \$112.00; No. 224, \$112.50; No. 225, \$113.00; No. 226, \$113.50; No. 227, \$114.00



**Melasses Gates—**  
 Stebbin's Pat. 70¢/70¢/70¢  
 Stebbin's Genuine 60¢/10¢/10¢  
 Stebbin's Tinned Ends 40¢/10¢  
 Chase's Hard Metal 50¢/10¢  
 Bush's 70¢/70¢/10¢  
 Lincoln's Patent 70¢/70¢/10¢  
 Weed's 30¢/10¢

**Ross, P. doz.**  
 Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

**Money Drawers—** P. doz. \$18.00  
**Nuzzles—**  
 Safety— P. doz. \$3.00 dis 25%

**Nails, see Trade Report.**  
 Wire Nails & Brads, list July 14 '87  
 Wire Nails, Standard Penny— P. doz. \$2.00

**Nail Puller—**  
 Curtiss Hammer— P. doz. \$9.00, net  
 Giant, No. 1— P. doz. \$30.00, 10%  
 Pelican— P. doz. \$2.00, dis 25%  
 Boss— P. doz. \$30.00, dis 20%  
 Lightning— P. doz. \$21.00

**Nail Sets—**  
 Square— P. gr., \$4.00 to \$4.25  
 Round— P. gr. \$3.25  
 Cannon's Diamond Point— P. gr., \$12.20

**Nut Crackers—**  
 Table (H. & B. Mfg. Co.)— 40%  
 Blake's Pattern— P. doz. \$2.00, dis 10%  
 Turner & Seymour Mfg. Co.— 50%

**Nuts—**  
 Nuts, off list Jan. 1, 1888: Square. Hex.  
 Hot Pressed— 5.4¢ 5.9¢  
 Cold Punched— 5.4¢ 5.5¢  
 In lots less than 100 lb., P. doz. add 1¢; 1-lb. boxes, add 1¢ to list.

**Oakum—**  
 Government— P. lb. 7¢ @ 8¢  
 U. S. Navy— P. lb. 8¢ @ 9¢  
 Navy— P. lb. 9¢ @ 10¢

**Oil—**  
 Zinc and Tin— 65¢/65¢/10%  
 Brass and Copper— 50¢/10¢/50¢/10%  
 Malleable, Hammers Improved, No. 1, \$3.00; No. 2, \$4.00; No. 3, \$4.50; No. 4, \$5.00; No. 5, \$5.50; No. 6, \$6.00; No. 7, \$6.50; No. 8, \$7.00; No. 9, \$7.50; No. 10, \$8.00; No. 11, \$8.50; No. 12, \$9.00; No. 13, \$9.50; No. 14, \$10.00; No. 15, \$10.50; No. 16, \$11.00; No. 17, \$11.50; No. 18, \$12.00; No. 19, \$12.50; No. 20, \$13.00; No. 21, \$13.50; No. 22, \$14.00; No. 23, \$14.50; No. 24, \$15.00; No. 25, \$15.50; No. 26, \$16.00; No. 27, \$16.50; No. 28, \$17.00; No. 29, \$17.50; No. 30, \$18.00; No. 31, \$18.50; No. 32, \$19.00; No. 33, \$19.50; No. 34, \$20.00; No. 35, \$20.50; No. 36, \$21.00; No. 37, \$21.50; No. 38, \$22.00; No. 39, \$22.50; No. 40, \$23.00; No. 41, \$23.50; No. 42, \$24.00; No. 43, \$24.50; No. 44, \$25.00; No. 45, \$25.50; No. 46, \$26.00; No. 47, \$26.50; No. 48, \$27.00; No. 49, \$27.50; No. 50, \$28.00; No. 51, \$28.50; No. 52, \$29.00; No. 53, \$29.50; No. 54, \$30.00; No. 55, \$30.50; No. 56, \$31.00; No. 57, \$31.50; No. 58, \$32.00; No. 59, \$32.50; 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No. 118, \$62.00; No. 119, \$62.50; No. 120, \$63.00; No. 121, \$63.50; No. 122, \$64.00; No. 123, \$64.50; No. 124, \$65.00; No. 125, \$65.50; No. 126, \$66.00; No. 127, \$66.50; No. 128, \$67.00; No. 129, \$67.50; No. 130, \$68.00; No. 131, \$68.50; No. 132, \$69.00; No. 133, \$69.50; No. 134, \$70.00; No. 135, \$70.50; No. 136, \$71.00; No. 137, \$71.50; No. 138, \$72.00; No. 139, \$72.50; No. 140, \$73.00; No. 141, \$73.50; No. 142, \$74.00; No. 143, \$74.50; No. 144, \$75.00; No. 145, \$75.50; No. 146, \$76.00; No. 147, \$76.50; No. 148, \$77.00; No. 149, \$77.50; No. 150, \$78.00; No. 151, \$78.50; No. 152, \$79.00; No. 153, \$79.50; No. 154, \$80.00; No. 155, \$80.50; No. 156, \$81.00; No. 157, \$81.50; No. 158, \$82.00; No. 159, \$82.50; No. 160, \$83.00; No. 161, \$83.50; No. 162, \$84.00; No. 163, \$84.50; No. 164, \$85.00; No. 165, \$85.50; No. 166, \$86.00; No. 167, \$86.50; No. 168, \$87.00; No. 169, \$87.50; No. 170, \$88.00; No. 171, \$88.50; No. 172, \$89.00; No. 173, \$89.50; No. 174, \$90.00; No. 175, \$90.50; No. 176, \$91.00; No. 177, \$91.50; No. 178, \$92.00; No. 179, \$92.50; No. 180, \$93.00; No. 181, \$93.50; No. 182, \$94.00; No. 183, \$94.50; No. 184, \$95.00; No. 185, \$95.50; No. 186, \$96.00; No. 187, \$96.50; No. 188, \$97.00; No. 189, \$97.50; No. 190, \$98.00; No. 191, \$98.50; No. 192, \$99.00; No. 193, \$99.50; No. 194, \$100.00; No. 195, \$100.50; No. 196, \$101.00; No. 197, \$101.50; No. 198, \$102.00; No. 199, \$102.50; No. 200, \$103.00; No. 201, \$103.50; No. 202, \$104.00; No. 203, \$104.50; No. 204, \$105.00; No. 205, \$105.50; No. 206, \$106.00; No. 207, \$106.50; No. 208, \$107.00; No. 209, \$107.50; No. 210, \$108.00; No. 211, \$108.50; No. 212, \$109.00; No. 213, \$109.50; No. 214, \$110.00; No. 215, \$110.50; No. 216, \$111.00; No. 217, \$111.50; No. 218, \$112.00; No. 219, \$112.50; No. 220, \$113.00; No. 221, \$113.50; No. 222, \$114.00; No. 223, \$114.50; No. 224, \$115.00; No. 225, \$115.50; No. 226, \$116.00; No. 227, \$116.50; No. 228, \$117.00; No. 229, \$117.50; No. 230, \$118.00; No. 231, \$118.50; No. 232, \$119.00; No. 233, \$119.50; No. 234, \$120.00; No. 235, \$120.50; No. 236, \$121.00; No. 237, \$121.50; No. 238, \$122.00; No. 239, \$122.50; No. 240, \$123.00; No. 241, \$123.50; No. 242, \$124.00; No. 243, \$124.50; No. 244, \$125.00; No. 245, \$125.50; No. 246, \$126.00; No. 247, \$126.50; No. 248, \$127.00; No. 249, \$127.50; No. 250, \$128.00; No. 251, \$128.50; No. 252, \$129.00; No. 253, \$129.50; No. 254, \$130.00; No. 255, \$130.50; No. 256, \$131.00; No. 257, \$131.50; No. 258, \$132.00; No. 259, \$132.50; No. 260, \$133.00; No. 261, \$133.50; No. 262, \$134.00; No. 263, \$134.50; No. 264, \$135.00; No. 265, \$135.50; No. 266, \$136.00; No. 267, \$136.50; No. 268, \$137.00; No. 269, \$137.50; No. 270, \$138.00; No. 271, \$138.50; No. 272, \$139.00; No. 273, \$139.50; No. 274, \$140.00; No. 275, \$140.50; No. 276, \$141.00; No. 277, \$141.50; No. 278, \$142.00; No. 279, \$142.50; No. 280, \$143.00; 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No. 334, \$170.00; No. 335, \$170.50; No. 336, \$171.00; No. 337, \$171.50; No. 338, \$172.00; No. 339, \$172.50; No. 340, \$173.00; No. 341, \$173.50; No. 342, \$174.00; No. 343, \$174.50; No. 344, \$175.00; No. 345, \$175.50; No. 346, \$176.00; No. 347, \$176.50; No. 348, \$177.00; No. 349, \$177.50; No. 350, \$178.00; No. 351, \$178.50; No. 352, \$179.00; No. 353, \$179.50; No. 354, \$180.00; No. 355, \$180.50; No. 356, \$181.00; No. 357, \$181.50; No. 358, \$182.00; No. 359, \$182.50; No. 360, \$183.00; No. 361, \$183.50; No. 362, \$184.00; No. 363, \$184.50; No. 364, \$185.00; No. 365, \$185.50; No. 366, \$186.00; No. 367, \$186.50; No. 368, \$187.00; No. 369, \$187.50; No. 370, \$188.00; No. 371, \$188.50; No. 372, \$189.00; No. 373, \$189.50; No. 374, \$190.00; No. 375, \$190.50; No. 376, \$191.00; No. 377, \$191.50; No. 378, \$192.00; No. 379, \$192.50; No. 380, \$193.00; No. 381, \$193.50; No. 382, \$194.00; No. 383, \$194.50; No. 384, \$195.00; No. 385, \$195.50; No. 386, \$196.00; No. 387, \$196.50; No. 388, \$197.00; No. 389, \$197.50; No. 390, \$198.00; No. 391, \$198.50; No. 392, \$199.00; No. 393, \$199.50; No. 394, \$200.00; No. 395, \$200.50; No. 396, \$201.00; No. 397, \$201.50; No. 398, \$202.00; No. 399, \$202.50; No. 400, \$203.00; No. 401, \$203.50; No. 402, \$204.00; No. 403, \$204.50; No. 404, \$205.00; No. 405, \$205.50; No. 406, \$206.00; No. 407, \$206.50; No. 408, \$207.00; No. 409, \$207.50; No. 410, \$208.00; No. 411, \$208.50; No. 412, \$209.00; No. 413, \$209.50; No. 414, \$210.00; No. 415, \$210.50; No. 416, \$211.00; No. 417, \$211.50; No. 418, \$212.00; No. 419, \$212.50; No. 420, \$213.00; No. 421, \$213.50; No. 422, \$214.00; No. 423, \$214.50; No. 424, \$215.00; No. 425, \$215.50; No. 426, \$216.00; No. 427, \$216.50; No. 428, \$217.00; No. 429, \$217.50; No. 430, \$218.00; No. 431, \$218.50; No. 432, \$219.00; No. 433, \$219.50; No. 434, \$220.00; No. 435, \$220.50; No. 436, \$221.00; No. 437, \$221.50; No. 438, \$222.00; No. 439, \$222.50; No.

**Machines—**

Flat Head, Iron.....	55¢
Round Head, Iron.....	50¢
<b>Bench and Bench—</b>	
Bench, Iron.....	55¢10¢55¢10¢10¢
Bench, Wood, Bench.....	70¢ doz \$2.25
Bench, Wood, Hickory.....	20¢10¢
Hand, Wood.....	25¢10¢25¢10¢55¢
Lag, Blunt Point.....	75¢75¢10¢
Coach and Lag, Gimlet Point.....	75¢
Bed.....	25¢10¢
Hand Rail, Sargent's.....	60¢10¢
Hand Rail, H. & B. Mfg. Co.....	70¢10¢75¢
Hand Rail, Am. Screw Co.....	75¢
Jack Screws, Millers Falls list.....	50¢50¢55¢
Jack Screws, P. S. & W.....	35¢
Jack Screws, Sargent.....	60¢10¢60¢10¢55¢
Jack Screws, Stearns.....	40¢40¢10¢

**Scroll Saws—**

Lester, complete, \$10.00.....	25¢
Rogers, complete, \$4.00.....	25¢
Barnes' Builders' and Cabinet Makers', \$15.....	25¢
Barnes' Scroll Saw Blades.....	35¢

**Scythe Snaths—**

Scythe Snaths.....	50¢2¢
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**Shears—**

American (Cast) Iron.....	75¢10¢75¢10¢55¢
Pruning.....	See Pruning Hooks and Shears
Barnard's Lamp Trimmers.....	70¢ doz \$3.75
Tinners'.....	20¢2¢
Seymour's, List, Dec. 1881.....	60¢10¢10¢60¢10¢10¢55¢
Heinrich's, List, Dec. 1881.....	60¢10¢10¢60¢10¢10¢55¢
Heinrich's Tailor's Shears.....	35¢
First quality C. S. Trimmers.....	80¢60¢10¢
Second quality C. S. Trimmers.....	80¢10¢80¢10¢10¢
Acme Cast Shears.....	10¢10¢
Diamond Cast Shears.....	10¢
Clipper.....	10¢10¢
Victor Cast Shears.....	75¢10¢75¢10¢55¢
Howe Bros. & Hulbert, Solid Forged Steel.....	40¢
Chicago Drop Forge & F. Co., Solid Steel Forged.....	70¢
Clausen Shear Co., Japaned.....	70¢
Clausen Shear Co., Nickel, same list.....	70¢

**Sheaves—**

<b>Sliding Door—</b>	
M. W. Co., list July, 1888.....	50¢10¢60¢55¢
R. & E., list Dec. 18, 1885.....	55¢20¢
Corbin's list.....	60¢10¢2¢
Patent Roller.....	60¢10¢2¢
Patent Roller, Hatfield's.....	75¢
Russell's Anti-Friction, list Dec. 18, 1885.....	60¢2¢
Moore's Anti-Friction.....	60¢
<b>Sliding Shutter—</b>	
R. & E. list Dec. 18, 1885.....	60¢10¢2¢
Sargent's list.....	60¢10¢
Reading list.....	60¢10¢10¢

**Ship Tools—**

L. & J. White.....	20¢5¢
Albertson Mfg. Co.....	25¢

**Shoes, Horse, Mule, &c.—**

<b>Horse—</b>	
Burden's, Perkins', Phoenix, at factory.....	\$1.00
<b>Mule—</b>	
Add \$1 per keg to above prices.	

**Or, Wrought—**

Ton lots.....	70¢ 9¢
1000 lb lots.....	70¢ 9¢
500 lb lots.....	70¢ 10¢

**Shot—**

<b>(Eastern prices 2¢ off, cash, 5 days.)</b>	
Drop, 70 bag, 25 lb.....	\$1.20
Drop, 70 bag, 5 lb.....	29
Buck and Chilled, 25 lb bag.....	1.45
Buck and Chilled, 5 lb bag.....	.34

**Shovels and Spades—**

Ames' Shovels, Spades, &c., list Nov. 1, 1885.....	20¢
Note.—Jobbers frequently give 5¢ off 75¢ extra on above.	
Griffith's Black Iron.....	50¢10¢
Griffith's C. S.....	60¢60¢10¢
Griffith's Solid C. S. R. R. Goods.....	20¢
Old Colony (Sawford Fork & Tool Co.).....	20¢
St. Louis Shovel Co.....	20¢20¢75¢
Hussey, Binns & Co.....	15¢25¢
Hubbard & Co.....	20¢20¢75¢
Lehigh Mfg. Co.....	50¢10¢
Payne Pettibone & Son, list January, 1886.....	30¢
Remington's (Lowman's Patent).....	30¢10¢40¢
Rowland's, Black Iron.....	50¢10¢
Rowland's Steel.....	60¢5¢60¢10¢

**Shovels and Tongs—**

Iron Head.....	60¢10¢60¢10¢55¢
Brass Head.....	60¢10¢10¢

**Skins, Thimble—**

Western list.....	75¢5¢75¢10¢
Columbia Wrt. Steel, list Nov. 1, 1887.....	20¢
Coldbrook's list.....	50¢10¢
Utica P. S. T. Skins.....	60¢
Utica Turned and Fitted.....	35¢

**Sieves—**

Buffalo Metallic, S. S. & Co.....	50¢25¢10¢
Barler Flour Sifters.....	70¢ doz \$2.00
Smith's Adjustable Sifters.....	70¢ doz \$2.25
Smith's Adjustable Milk Strainer.....	70¢ doz \$2.00
Smith's Adjustable F. & C. Strainer.....	70¢ doz \$1.75

**Sieves, Wooden Rim—**

Mesh 18, Nested, 70¢ doz.....	70¢ 90¢
Mesh 20, Nested, 70¢ doz.....	85¢ 1.00
Mesh 34, Nested, 70¢ doz.....	\$1.00 1.10

**Slates—**

School, by case.....	50¢10¢
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**Snaps, Harness, &c.—**

Anchor (T. & S. Mfg. Co.).....	65¢
Fitch's (Bristol).....	50¢10¢
Hotchkiss.....	10¢
Andrews.....	50¢
Sargent's Patent Guarded.....	70¢10¢10¢
German, new list.....	40¢10¢
Covert.....	50¢2¢
Covert, New Patent.....	50¢5¢2¢
Covert, New R. E.....	70¢10¢
Covered Spring.....	60¢10¢10¢

**Soldering Irons—**

Covert's Adjustable, list Jan. 1, 1886.....	35¢2¢
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**Spoke Shaves—**

Iron.....	45¢
Wood.....	30¢
Bailey's (Stanley B. & L. Co.).....	40¢10¢
Stearns.....	20¢10¢30¢

**Spoke Trimmers—**

Bonney's.....	70¢ doz \$10.00, dis 50¢
Stearns.....	20¢10¢
Ives', No. 1, \$15.00; No. 2, \$12.00 70¢ doz.....	55¢10¢
Douglas.....	70¢ doz \$9.00, dis 20¢

**Spoons and Forks—**

<b>Tinned Iron—</b>	
Basting, Cen. Stamp. Co.'s list.....	70¢10¢
Solid Table and Tea, Cen. Stamp. Co.'s list.....	70¢10¢
Buffalo S. S. & Co.....	35¢2¢
Silver-Plated—(4 mos. or 5¢ cash 30 days).....	
Meriden Brit. Co., Rogers.....	50¢
C. Rogers & Bros.....	50¢
Rogers & Bro.....	50¢
Reed & Barton.....	50¢
Wm. Rogers Mfg. Co.....	50¢10¢60¢
Simpson, Hall, Miller & Co.....	50¢10¢
Holmes & Edwards Silver Co.....	50¢10¢
H. & E. Silver Co., Mexican Silver.....	50¢55¢
H. & E. Silver Co., Durham Silver.....	50¢55¢
German Silver.....	50¢50¢55¢
German Silver, Hall & Elton.....	50¢55¢ cash
Nickel Silver.....	50¢55¢ cash
Britannia.....	60¢
Boardman's Flat Ware.....	50¢10¢
Boardman's Nickel Silver.....	50¢
Boardman's Britannia Spoons, case lots.....	60¢ 4 mos.

**Springs—**

Elliptic, Concord, Platform and Half Spiral.....	60¢60¢55¢
Cliff's Bolster Springs.....	25¢

**Squares—**

Steel and Iron.....	75¢10¢80¢
Nickel-Plated.....	75¢10¢80¢
Try Square and T Bevels.....	60¢10¢10¢70¢
Disston's Try Square and T Bevels.....	45¢10¢
Waterbottom's Try and Miter.....	30¢10¢
Starrett's Micrometer Caliper Squares.....	25¢
Avery's Flush Bevel Squares.....	30¢55¢

**Staples—**

Fence Staples, Galvanized.....	Same price as Br & W
Fence Staples, Plain.....	See Trd. Rep.

**Steelyards—**

Steelyards.....	40¢10¢50¢
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**Stocks and Dies—**

Blacksmith's Waterford Goods.....	30¢
Blacksmith's Butterfield's Goods.....	50¢30¢10¢
Lightning Screw Plate.....	25¢30¢
Reece's New Screw Plates.....	33¢5¢40¢

**Stone—**

Hindustan No. 1, 3¢; Axe, 3¢; Slips.....	1¢
Sand Stone.....	2¢
Washita Stone, Extra.....	10¢10¢20¢
Washita Stone, No. 1.....	10¢14¢15¢
Washita Stone, No. 2.....	10¢11¢
Washita Slips, No. 1, Extra.....	30¢38¢
Washita Slips, No. 1.....	24¢25¢
Arkansas Stone, No. 1, 4 to 6 in.....	\$1.50
Arkansas Stone, No. 1, 6 to 9 in.....	\$1.85
Turkey Oil Stone, 4 to 8 in.....	40¢
Turkey Slips.....	\$1.00 1.50
Lake Superior, Chase.....	16¢
Lake Superior Slips, Chase.....	31¢32¢
Seneca Stone, Red Paper Brand.....	18¢20¢
Seneca Stone, High Rounds.....	20¢25¢
Seneca Stone, Small Whets.....	20¢24¢

**Stone Polish—**

Joseph Dixon's.....	70¢ 80¢, dis 10¢
Gem.....	70¢ 80¢, dis 10¢
Gold Medal.....	70¢ 80¢, dis 25¢
"Mirror".....	70¢ 80¢, dis 25¢
Lustr.....	70¢ 80¢, dis 25¢
Ruby.....	70¢ 80¢, dis 25¢
Rising Sun.....	70¢ 80¢, dis 25¢
Dixon's Plumbago.....	70¢ 80¢, dis 25¢
Boynton's Noon Day.....	70¢ 80¢, dis 25¢
Parlor Pride Stove Enamel.....	70¢ 80¢, dis 25¢
Yates' Liquid.....	70¢ 80¢, dis 25¢
Yates' gal.....	70¢ 80¢, dis 25¢
Yates Standard Paste Polish, 10 lb cans.....	70¢ 80¢, dis 25¢
Jet Black.....	70¢ 80¢, dis 25¢
Japanese.....	70¢ 80¢, dis 25¢
Pirexide.....	70¢ 80¢, dis 25¢
Diamond O. K. Enamel.....	70¢ 80¢, dis 25¢
Bonnell's Liquid Stove Polish.....	70¢ 80¢, dis 25¢
Bonnell's Paste Stove Polish.....	70¢ 80¢, dis 25¢
Black Eagle Benzine Paste, 5 and 10 lb cans.....	70¢ 80¢, dis 25¢
Black Jack Water Paste, 5 and 10 lb cans.....	70¢ 80¢, dis 25¢
Nickel Plate Paste.....	70¢ 80¢, dis 25¢

**Tacks, Brads, &c.—**

<b>List, Jan. 2, 1888.—(Note.—Some manufacturers are selling Tacks at slightly higher prices than those named):</b>	
American Iron Carpet.....	80¢80¢55¢
Steel Carpet.....	80¢80¢55¢
Swedes Iron Carpet.....	80¢80¢55¢
American Iron Cut.....	75¢75¢10¢
Swedes Iron.....	75¢75¢10¢
Swedes Iron, Upholsterers'.....	75¢10¢75¢10¢55¢
Tinned Swedes Iron.....	75¢10¢75¢10¢55¢
Tinned Swedes Iron, Upholsterers'.....	75¢10¢75¢10¢55¢
Gimp and Lace.....	75¢10¢75¢10¢55¢
Tinned Gimp and Lace.....	75¢10¢75¢10¢55¢
Swedes Iron Trimmers.....	75¢10¢75¢10¢55¢
Swedes Iron Miners'.....	75¢10¢75¢10¢55¢
Swedes Iron Bill Posters or Railroad.....	75¢10¢75¢10¢55¢
Swedes Steel (Swedes Iron price list).....	80¢80¢55¢
Copper Tacks.....	80¢80¢55¢
Copper Finishing Trunk and Clout Nails.....	70¢10¢70¢10¢10¢
Finishing Nails.....	70¢10¢70¢10¢10¢
Trunk and Clout Nails.....	70¢10¢70¢10¢10¢
Tinned Trunk and Clout Nails.....	70¢10¢70¢10¢10¢
Basket Nails.....	70¢10¢70¢10¢10¢

**Common and Patent Brads, 70¢10¢70¢**

Hungarian Nails.....	70¢10¢70¢10¢10¢
Chair Nails.....	70¢10¢70¢10¢10¢
Zinc Glaziers' Points.....	50¢50¢55¢
Cigar Box Nails.....	50¢10¢50¢10¢55¢
Picture-Frame Points.....	50¢10¢50¢10¢55¢
Looking-Glass Tacks.....	50¢10¢50¢10¢55¢
Leathered Carpet.....	50¢10¢50¢10¢55¢
Brush Tacks.....	50¢10¢50¢10¢55¢
Shoe Finders, list Jan. 2, 1888.....	10¢10¢55¢
Lining and Saddle Nails, list Jan. 1, 1888.....	30¢10¢10¢
Silvered.....	20¢10¢10¢
Double-Pointed Tacks.....	85¢
Wire Carpet Nails.....	50¢10¢
Wire Brads & Nails, see Nails, Wire.....	
Steel Wire Brads, K. & E. Mfg. Co.'s list.....	50¢10¢

**Tap Borers—**

Common and Rind.....	20¢10¢
Ive's Tap Borer.....	35¢10¢
Enterprise Mfg. Co.....	20¢10¢30¢
Clark's.....	35¢35¢

**Tapes, Measuring—**

American.....	25¢10¢
Spring.....	40¢
Chesterman's, Regular list.....	25¢30¢

**Thermometers—**

Tin Case.....	80¢80¢10¢
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**Thimble Skins—See Skins.****Ties, Bale—Steel**

Standard Wire, list.....	50¢10¢55¢
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**Tinners' Shears, &c.—**

Shears and Snips (P. S. & W.).....	20¢25¢
Punches, see Punches.....	
Snips, J. Mallinson & Co.....	33¢35¢

**Tinware—**

Stamped, Japanned and Pieced, list Jan. 20, 1887.....	75¢75¢55¢
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**Tire Benders, Upsetters, &c.—**

Stoddard's Lightning Tire Upsetters.....	15¢
Detroit Perfected Tire Bender.....	15¢

**Tobacco Cutters—**

Champion.....	20¢10¢30¢
Wood Bottom.....	70¢ doz \$5.00 85¢25¢
All Iron.....	70¢ doz \$4.25
Nashua Lock Co.'s.....	70¢ doz \$18.00 55¢55¢
Wilson's.....	70¢ doz \$24.00 55¢10¢
Sargent's.....	70¢ doz \$30.00 40¢
Acme.....	70¢ doz \$30.00 40¢

**Transom Lifters—**

Wollensack's Class 3 and 4, Bronzed Iron.....	50¢
Class 3 and 4, Bronze Metal.....	25¢
Class 3 and 4, Brass.....	35¢
Skylight Lifters.....	35¢
Crown, Eagle and Shield.....	50¢
Rether's Bronzed Iron Rods, list Jan. 1, 1887.....	50¢2¢
Rether's Real Bronze or Nickel Plate.....	50¢2¢
Excelator.....	50¢10¢2¢
Shaw's.....	50¢10¢
Payson's Universal.....	40¢40¢10¢

**Traps—**

<b>Game—</b>	
Newhouse.....	35¢40¢55¢
Onida Pattern.....	70¢70¢55¢
Game, Blake's Patent.....	40¢10¢55¢
<b>Mouse and Rat—</b>	
Mouse Wood, Choker.....	11¢12¢
Mouse, Round Wire.....	70¢ 1.50, dis 10¢
Mouse, Catch, Wire.....	70¢ 2.50, dis 10¢
Mouse, Catch, em-alive.....	70¢ 2.50, dis 15¢
Mouse, "Bonanza".....	70¢ 10.00 net
Mouse Delusion.....	70¢ 18.00, dis 15¢
Rat, "Decoy".....	70¢ 10.00, dis 10¢
Ideal.....	70¢ 10.00, dis 10¢
Cyclone.....	70¢ 85.25
Hotchkiss Metallic Mouse, 5-hole traps.....	70¢ 90¢
In full cases.....	70¢ 75¢

**Travels—**

Lothrop's Brick and Plastering.....	25¢
Reed's Brick and Plastering.....	25¢
Disston's Br & Plastering.....	25¢10¢
Peace's Plastering.....	25¢
Clement & Maynard's.....	20¢
Rose's Brick.....	15¢20¢
Forre's Brick.....	25¢
Forre's Brick and Plastering.....	20¢
Garden.....	70¢

**Triers—**

Butter and cheese.....	25¢
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**Trucks, Warehouse, &c.—**

B. & L. Block Co.'s list, '82.....	40¢
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**Tubes, Boiler—**

See Pipe.....	
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**Twine—**

Flax Twine.....	BC. B.
No. 9, 14 and 18 B Balls.....	22¢ 30¢
No. 12, 14 and 18 B Balls.....	21¢ 25¢
No. 18, 24 and 30 B Balls.....	18¢ 25¢
No. 24, 30 and 36 B Balls.....	16¢ 27¢
No. 36, 42 and 48 B Balls.....	16¢ 27¢
No. 204, Matras, 1/2 and 1 B Balls.....	45¢50¢
Chalk Line, Cotton.....	25¢
Mason Line, Linen.....	55¢
2-Ply Hemp, 1/2 and 1 B Balls (Spring Twine).....	11¢
3-Ply Hemp, 1 1/2 B Balls.....	12¢12¢
3-Ply Hemp, 1 1/2 B Balls.....	11¢11¢
Cotton Wrapping, 5 Balls to lb.....	15¢16¢
2, 3, 4 and 5-Ply Jute, 1/2 B Balls.....	10¢
Wool.....	13¢14¢
Paper.....	13¢14¢
Cotton Mops, 6, 9, 12 and 15 lb to doz.....	18¢



FEBRUARY 13, 1889.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.